

Academic achievement,

~~A Study of~~ Self-Concept, Locus of Control and ~~Causal Attributions~~ in 'Special' and
'Regular' ~~Class Children~~ Greek primary
school children.

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ABSTRACT

Recently and despite definitional problems, a clearly identifiable group of children has emerged characterized as 'learning disabled' for which programming and hence specialized services are being made available in the Greek state school setting. A more complete description of these children seems necessary in order to find out if and how they differ from other children in personality and whether their academic difficulties have created unique problems for them. The purpose of the present study was, then, to empirically investigate the comparative differences in measures of self-concept (academic and general), locus of control and causal attributions in Special and Regular Class primary school children, in Greece.

424 children enrolled in the third through sixth primary school grades served as subjects. The sample was drawn from state schools located within the three educational districts in the county of Attiki. There were 72 Special Class, and 352 Regular Class children. The Regular Class children were classified as Low Achievers (LA) and Normal Achievers (NA) on the basis of their school grades.

Three self report questionnaires were used; the Perceived Competence Scale for children (PCS), and the Self Description Questionnaire (SDQ) were used to measure academic self-concepts and global self-esteem. The two cognitive competence scales from the PCS and the two subject-specific scales from the SDQ were used to assess children's perceptions of their academic abilities. Global self-esteem was measured by a scale from the PCS. The Intellectual Achievement Responsibility Questionnaire (IAR) was used as a measure of locus of control and causal attributions. Teacher ratings of academic performance in Reading and Maths and a Mathematics Test prepared by the researcher were used as achievement measures.

The primary independent variable was group inclusion and school achievement. In addition sex and age differences were investigated.

Results showed significant and consistent between group differences. Special Class children were found to differ significantly from Normal Achievers on academic self-

concepts and global self-esteem. There were also significant differences between Low and Normal achievers on academic self-concepts but not on global self-esteem. Special Class children differed from the other two groups on their locus of control orientation and attributional patterns as well. They attributed both their successes and their failures to external factors, thus fitting the picture of 'learned helplessness'. Low achievers seem to hold the same attributional patterns as Normal Achievers, attributing their successes to their efforts and their failures externally. Suggestions are made that this is likely to be due to societal pressures.

Developmental differences were evident in relation to locus of control, with older children showing greater internality. There were also age differences in relation to Perceived Competence Evaluation (PCE), in Special Class children, implying that this group of children develop more negative academic self-concepts as they grow older.

Results seem to suggest that academic underachievement accompanied by Special Class placement had a substantial effect on children's academic self-concept, global self-esteem and pattern of attributions.

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Chapter 1:

1.1 Introduction :

The emphasis put by current theoretical and empirical work in both psychology and education on the active constructive role of the learner in the learning process has resulted in efforts to better understand learning failure and enhance the learner's control in achievement situations. Two lines of inquiry have been developed in this respect. One of them has focused on children's cognitive-monitoring processes and strategic actions that are believed to facilitate effective human performance (Cullen, 1985). The other, which represents the area of interest of this study, has centered on motivational and personality variables that affect children's learning (Stipek and Weisz, 1981). Work in this field includes a) investigations of children's locus of control, self-concept, expectations and attributions for success and failure; and b) studies of the phenomenon of learned helplessness.

Self-related beliefs are considered significant behavioural mediators as they are thought to influence information processing, to regulate affect and to motivate individuals to action. As such they seem critical in organizing past and directing future behaviour. Feelings of competence and efficacy seem to be key factors in the well being and successful functioning of the individual, in the ability to protect one's self from the effects of stress and even in staying healthy and preventing disease (Markus, Cross and Wurf, 1990).

The vast literature on achievement motivation recognizes that academic success entails much more than sheer ability. Several writers (Covington and Omelich, 1979c; Hamachek, 1987; Phillips, 1984; Purkey, 1970; Yamamoto, 1972) have emphasized that children's cognitions and feelings about themselves seem to be potent predictors of how they will approach and react to achievement demands and extensive empirical evidence has lent support to this belief (Brookover et al., 1967; Bryne, 1984; Shavelson and Bolus, 1982). Several cognitive theories of achievement motivation

including self-efficacy theory (Bandura, 1977, 1981), self-worth-theory (Covington and Beery, 1976) and attribution theory (Dweck and Reppucci, 1973; Weiner, 1986) consider self-perceptions of ability essential for academic success. In all these theories ability perceptions are assumed to affect behaviour and learning and thus to have practical educational importance.

One of the theorists who stressed the importance of affective variables in learning is Bloom (1976). In his model of school learning, he identified three major input components which influence performance on a specific learning task: 'cognitive entry behaviours', 'affective entry behaviours' and 'quality of instruction'. He states that the manipulation of these three components can serve to reduce a large amount of the individual differences which usually lead to variation in achievement.

In dealing with the affective entry characteristics, Bloom (1976) argued that these variables form a crucial component in learning and achievement. The development of these affective characteristics is grounded in feelings of acceptance, competence and worth which are learned in a social environment through the interaction with others. Several other theorists (Cooley, 1902; Coopersmith, 1967; Covington and Beery, 1976) also stressed that children come to value themselves as they are valued by significant others, parents, peers and teachers.

The notion of the importance of significant others in the formulation of a positive self-concept serves to highlight the role of the school environment in this respect. The idea of self-concept as an outcome and a mediator of schooling has long been implicit in the literature. Although by the time children reach school age they already possess a firm picture of themselves and their worth as a person which is based on parental love, interest and acceptance, it is in school that they begin to face a continuous and pervasive evaluation which will play a critical role in "*confirming self concept details and self esteem levels*" (Gurney, 1988).

Jackson (1968) observed that although every child experiences the pain of failure and the joy of success long before he reaches school age, it is only when he enters the classroom that his achievements (or lack of them) become official. The years 5-12 are

considered particularly important for the formation of academic self concept and a global sense of self-worth. For the middle childhood pupil, school is the first occasion where he will measure himself against others. It is during this period that children's self concepts are either firmly established in experiences of success and pride in themselves or shaken by self doubt and feelings of unworthiness. Erikson (1963) considered the developmental tasks and stresses of this period to be centered around acquiring a sense of industry versus a sense of inferiority which is thought to be the result of success or lack of it in learning situations and which forms the basis of a self-concept of ability.

In school, the child learns that to be able is to be worthy. Although personal and social educational aims are meant to be equally important as the intellectual-academic ones, in reality the dominant value operating generally in the school system is academic achievement. Academic achievement is also a pervasive cultural value in Western societies and both parents and teachers put heavy emphasis on it. It is not surprising, therefore, that academic values and standards become an important index of self worth for most children. The general tendency to equate ability and human value leads many students to the belief that they are only as good as their accomplishments and failure makes them unworthy of the approval of others. Perceiving ability to be a central ingredient of academic success and equating school success with personal worth may become detrimental for many children. Firstly, because perceptions of intellectual adequacy are easily threatened by failure and schools as institutions are failure prone (Bloom,1977). Secondly, when low attainment is interpreted as low perceived ability, the implication is that one is lacking a fundamental personal trait, a fact which may constitute a serious threat to self esteem.

Moreover, children from the early school years learn that being able means being more able than others (Stipek, 1984). It has been argued that this process of social comparison, although intensified in competitive settings, is also evident in settings designed to minimize ability comparison and grade competitions. Research also shows that the social comparison process is especially utilized when one is unsure of his own

ability. Because a number of children will necessarily fail to achieve success by this standard, they will be particularly at risk of forming a picture of themselves as incapable and unworthy.

As patterns of successes and failures become histories of success and failure, the child will come to conceptualize himself as a capable or incapable learner, a pattern of thinking that is critical not only to the motivation for learning and subsequent achievement, but also influencing many other spheres of his life. Although being incompetent in one specific area could be unrelated to feelings in another specific area, incompetence in academic areas can be so pervasive as to have a significant impact on the overall evaluation of self. This in turn will determine subsequent success in school and later on in work and life (Burns, 1982; Hamachek, 1987).

It is apparent, then, that for children whose attempts to learn end in repeated failure, the school can become a particularly threatening environment. The child's comparison of himself with others would leave him with a sense of inferiority which might have an impact on academic self concept and his overall feelings of worth. If the child comes to believe that his abilities are not adequate, then he would approach learning with reluctance or dislike (Bloom, 1976; Brookover et al., 1965; Bryan and Pearl, 1979).

Professionals working with learning disabled (LD) and chronically underachieving children express widespread concern that these children's school experiences (e.g. academic failures, placement in special classes) will lead to negative self-concept that would adversely affect their adjustment both in and out of school. This concern is substantiated by a number of studies reporting lower academic self-concepts of children with learning difficulties relative to their non-disabled peers (Chapman and Boersma, 1979b; Winne et al., 1982). Of greater concern is, however, the way these children feel about themselves generally. Some studies assessing self-concept not specific to the academic domain have indicated that children with learning difficulties in specific subject areas may tend to generalize these specific negative self-images to an overall negative self-concept (Butkowsky and Willow, 1980; Chapman and Boersma, 1979b; Rogers and Saklofske, 1985; Winne and al., 1982).

In addition, special class placement, because of the subtle or not-so-subtle message that it communicates to children, might have a further detrimental effect. It has been suggested by many theorists that self-perceptions could play the role of self-fulfilling prophecies. As a result of chronically self-devaluating situations and special class placement, the child might come to accept himself as a failure and give up expectations for future success thus entering a vicious circle (Sabatino, 1983). Moreover, teachers and peers will come to see failure and reduced performance as characteristic of the child and respond to this stereotype. This, might further confirm the child's beliefs about his self-concept and might lead to a further downward drift.

Closely related to self-concept is the child's understanding of the contingencies that govern success and failure, that is, the degree to which he believes he exercises control on what is happening to him, along with his interpretation for the causes of his successes and failures. These beliefs seem to play a decisive role in the chain of interrelationships between self concept and achievement. A history of academic successes accompanied by a positive self-concept carry with them the belief that success is based in great part upon one's own effort and ability whereas failure is not necessarily a reflection of an inner deficit. Such an attitude would enable the individual to handle the developmental tasks successfully, would reinforce a sense of competence and mastery, and motivate him to tackle even more demanding challenges (Bandura, 1977).

The attribution theory proposed by Weiner (1974, 1979) proposes that individuals who experience mastery early in life within a responsive environment come to believe that their success is determined in great part by their own effort and ability; those whose life experiences are frustrating are more apt to believe that success is due to factors outside their control, thereby minimizing the feeling that they will be able to succeed again in the future. In terms of failure experiences, those who feel competent often would attribute unsuccessful events to a variable that is within their power to change, whereas those with low self-esteem typically ascribe failure to a basic inability in themselves, a

feeling which contributes to a state of helplessness (Abramson et al., 1978; Dweck and Goetz, 1978).

In support of the claims of attribution theory, empirical research shows that successful outcomes ascribed to the self seem to result in greater self-esteem than does success which is externally distributed (Marsh, Relish, and Smith, 1983; Marsh, Smith, and Barnes, 1983). Moreover previous findings in this area clearly indicate that individuals who report a more internal locus of control (relative to those with a more external locus of control) show better performance on a variety of cognitive indices, including grades, achievement tests and intelligence tests. It follows, therefore, that the experience of academic failure associated with certain groups would influence their control orientation, and groups differing in academic achievement would differ in locus of control/causal attributions. Indeed empirical studies show that learning-disabled students are found to hold more external locus-of-control orientations (Chapman and Boersma, 1979) and attributions that suggest learned helplessness (Pearl, Bryan and Donahue, 1980).

The aim of the present study, which took place in primary schools in Athens, was to investigate differences in self-concept (academic and general), locus of control and causal ascriptions in Special (SC) and Regular Class (RC) children. A second purpose was to explore patterns of relationships between self-referant constructs and academic achievement. Success in learning was considered as a critical task for the middle childhood children of this study. It was reasoned that successful completion of cognitive tasks would bring a sense of mastery and would reinforce the child's self-esteem, thus enabling and motivating him to tackle even more demanding challenges. Failure to face the cognitive demands would weaken the child's sense of mastery and would lower his self-esteem. Children who experience mastery in their early school career would come to believe that their success is determined by their ability or efforts; those whose early experiences are frustrating would be apt to believe that they have little control over their lives. In this case feelings of helplessness and depression may emerge. This sense of ineffectiveness would make success in the future more

problematic. It was assumed that the longer the failure situation would persist the more difficult it would become to interrupt the vicious cycle. In order to avoid further humiliation the child may adopt defensive strategies to protect his self-esteem and although some of them might be beneficial and growth fostering, others might be self-defeating.

It was hypothesized, therefore, that a child's actual achievement (as defined by teacher evaluations), his perception of his achievement and his placement in 'regular' or 'special' classes would directly influence academic self-concept and indirectly global self-worth. In addition, school achievement and the child's evaluation of himself was thought to be related to the degree to which the child would feel responsible for his successes and failures and whether he would ascribe them to internal (effort/ability) or external factors. Special class placement as a process emphasizing differences between children and leading to devaluation and loss of status, was considered to have a direct impact on self-concept and locus of control. These self-perceptions and evaluations were then thought to further influence the child's motivation and orientation to learning. It was hypothesized that the wider social context with its emphasis on particular values and the specific learning environment of the classroom would exercise a major influence on both self-concept and children's control beliefs.

It was reasoned that the excessive emphasis put on academic achievement by the Greek society would make it an important index of global self-esteem for the children of this study. It was further assumed that it would be difficult for failing students to discard the importance of academic achievement and compensate for their academic failures by deriving satisfaction from elsewhere. Moreover, it was thought that the organization of the Greek classroom with its authoritarian teacher-centered character and its homogeneous task orientation would foster comparative evaluations among students and encourage an academically based status hierarchy by making the failure of underachieving students more salient.

Also of interest were possible developmental trends. It was thought that the longer exposure to the school setting might affect differentially the development of self-

concept and locus of control/causal attributions. It was expected that academic difficulties would play a lesser role for the young than the older children.

Given the importance of the wider and more specific social context within which individuals develop for the formation of both self-concept and control beliefs, an understanding of the general school system in Greece as well as the development of special education was considered necessary. Therefore, in the subsequent sections of this chapter, a brief overview of the Greek educational system will be given, together with an outline of special education in Greece and the nature of the Greek family and school expectations concerning academic achievement will be discussed. This will be followed by a discussion of the concept of 'learning disabilities' and a further elaboration of the focus of the present research.

Chapter 2 reviews the theory and research relevant to the constructs of interest. A brief historical review of those self-theories which were considered as most influential in recent theorizing is given. Assumptions common to most theories about the self are, then, discussed and the problem of defining self-concept is dealt with. Subsequently, two of the most influential theories relating self-concept to education - Bloom's (1976) theory of school learning and Covington and Beery's (1976) self-worth theory - are discussed. The role of teacher influences and the consequences of special class placement are briefly considered. In addition to the discussion pertaining to locus of control and causal attributions, learned helplessness is also considered as particularly relevant to children facing academic failure. The chapter ends with a synthesis of some of the theories reviewed before into a scheme which formed the frame of this study and from which several hypotheses were derived.

Chapter 3 contains a discussion of methodological problems, a description of the scales used in the study and the steps followed for their translation and validation for the Greek sample.

Chapter 4 presents the results of this research, followed by Chapter 5 in which the results are discussed together with the implications of the present findings for Greek education.

1.2. The Context of the Study: The Greek Educational System:

This section will not provide a full coverage of the Greek educational system. Reference will be made only to the recent legislation reforms and a brief account of the existing structures in general and special education will be given in order to delineate the context of the present study.

1.2.1 Overview:

The wish for a reform in education has always been a constant motivation for many Greeks. From the beginning of the 20th century the educational debate evolved around two topics :

1) The language problem, that is, demotiki (the every day language of the people and the one used in popular civilisation and tradition) versus katharevousa (the supposedly 'pure' Greek language invented by the Hellenic purists which as an artificially constructed language was never spoken or used anywhere except in formal intellectual or aesthetic communication).

2) The orientation of the curriculum, that is, practical vs classicist.

There have been many attempts to reform the Greek educational system which was classicist and conservative, and to adopt 'demotiki' as the language of instruction, in 1913, 1917, 1922, and 1929 (Eliou, 1988). These were mostly promoted by liberal governments but had led to strong conservative opposition. The last attempt to reform the system took place in 1964. However, the country retreated into conservatism again when the military junta seized power in 1967 (Eliou, 1988).

Following the restoration of democracy in 1974 problems in education were numerous. Education became an area of great interest and was regarded as the only means through which a democratic society could be restored. In addition, there was a general demand for a more realistic education which would consider the student's employment chances

by preparing them with practical skills that could be accommodated within the employment structure of society.

The newly elected government legislated four laws (Law No 186/1975, 309/1976, 682/1978 and 815/1978) aiming to carry out reforms in education. Among the changes were the increase in compulsory education from 6 to 9 years, the abolition of entrance examinations for the gymnasio, and the recognition of 'Demotiki' as the only modern Greek language (Persianis, 1978). More specifically, Law 309/1976 brought the following educational reforms:

1. Extension of compulsory education from 6 - 9 years.
2. Provision of free education at all levels.
3. Establishment of 'demotiki' as the official language.
4. Division of secondary school into two cycles, a 3-year compulsory gymnasium and a 3-year non-compulsory lyceum.
5. Abolition of entrance examinations for the gymnasium.
6. Revision of primary and secondary curriculum, with more emphasis on physical science and mathematics.
7. Revision of the selection system for higher education.
8. Establishment of KEME (Centre of Educational Research and Teacher in-service training).

The official acceptance of 'Demotiki' as the only modern language and as the medium of instruction at all levels signified the end of the country's 'bilingual' problem, and terminated the fierce educational debate which revolved around it. Law 309/1976 specified that this language was to be used in writing "*all educational textbooks at all educational levels*" from the academic year 1976 - 1977 (Dimaras, 1978). However, the new reforms merely attempted to adjust rather than radically change the educational system. The old subject hierarchy was maintained and no significant difference in the structure of the curriculum had been brought about by the new curricular adjustments. What has changed was the disproportionate representation of classical Greek, which constituted a rational re-adjustment rather than a structural change.

1.2.2 Recent Legislation and the subsequent Changes in Education :

After the 1981 general election an internal reform took place aiming to change the curricula of general education, the school textbooks and the pedagogic relations. It included the following changes:

- a) The establishment of 'demotiki' as the official language of the country.
- b) The establishment of the one accent system in 1982.
- c) The abolishment of general headmasters and supervisors of primary and secondary education by Law 1232/1982, the eradication of inspectors of education and their replacement by the counsellors by Law 1232/1982.
- d) The preparation of curricula for primary and secondary education and the publication of new textbooks (Dervisis, 1985, p.94).

Under regulations 583/1982, the new curriculum for the first two grades of primary education became known to the public and initially the textbooks for these two grades were published with the 'Teacher's Guides' which contained analytic instruction diagrams (i.e. detailed objectives and tasks to be followed). Previously the same curricula and textbooks had been used almost unchanged in the primary school since the beginning of the century. Gerou (1981, p.19) states that

"...the curricula for general education keep until today their basic structures and this means that they are in full contrast with reality. The only changes that took place in this long period of seventy years are changes of addition and subtraction. They include or exclude curriculum material".

Gradually the curricula for the rest of the primary grades was prepared and the remaining school textbooks were published. The Primary Teachers' Union (DOE) and many educationists responded positively to the new textbooks. Especially the Teacher's Guides were considered an important innovation, as it was the first time in the history of the Greek education that the textbooks were accompanied by 'Teacher's Guides'. Some educationalists argued that the new language books were the best example illuminating a new orientation in general education and bringing education up to date by emphasizing the primacy of the social present over the historic past; by promoting a democratic worldview and modern Greek values; and by avoiding 'catechism' and

'dogmatism' (Vouyioukas, 1984a, 1984b; Bousakis 1986). Others, however, were of a different opinion. For example, Noutsos (1986) stated that although the content of the new textbooks was progressive and modernised in relation to the books they had replaced, the changes effected were still within the framework of bourgeois values and models of behaviour. Noutsos also argued that systematic research was needed to assess the extent and the quality of the new books.

In January 1984, the time when the government's proposed legislation (Law 1566) was given to the media, the unions of Primary (DOE) and Secondary (OLME) school teachers stated their agreement with the basic provisions and the philosophy of the proposed legislation. This legislation was voted in September 1985 only by the government party.

Law 1566/1985 aimed to establish democratic planning in education and to reinforce decentralisation and democratisation of education. However, the local governing bodies, (i.e. school committees, school councils, communal councils) and the National Council of Education sustained only advisory jurisdiction while the State Department of Education remained on the top of the education pyramid (Noutsos, 1986). The aim of general education according to Law 1566/1985 is

"to contribute to the complete, harmonious and unbiased development of the pupils' perception and character, independent of gender and social origin, so that they may have the opportunity to become complete individuals and to contribute constructively to society" (article 1, 1st paragraph).

The same article states specific objectives for primary and secondary education which are to develop pupils into free, responsible, democratic human beings who will be able to protect the national independence and democracy. Educationalists (Voros, 1985; Noutsos, 1986) point out certain contradictions which appear in the new legislation, especially in the articles related to the objectives of education. Noutsos (1986) argues that *"these contradictions seem to be a repetition of the well known Hellenic Orthodox Christian ideal"*, which was set down by the constitution of 1952. The Law not only refers to this ideal but includes it as part of the educational principles. If one sets aside the issues referring to the *"creation of free, responsible and democratic people"* (article

1), which has also been implied in Law 309/1976, the only apparent new objective in this Law is the *"development of the pupils' thoughts so that they may become aware of the social values and equality of mental and physical work"*. Noutsos (1986) argues that since this equality does not exist in Greek society it is impossible for a pupil to become aware of something that does not exist.

1.2.3 Current Provision:

Even under the new legislation the Greek educational system remained highly centralised. The state body directly responsible for education is the Ministry of Education and Religion. Its responsibilities include proposing and implementing Government policy at all educational levels, the preparation of curriculum timetables and textbooks and the management of the education system. One centrally prescribed subject-based national curriculum is used by all pupils in all schools, state and private. Documents on curricular aims and objectives are prepared by a consultative committee (KEME) attached to the Ministry of Education. School books are distributed free by the Ministry of Education and are compulsory in all schools. The teachers are civil servants appointed -by priority of application- by the Ministry of Education and Religion.

1.2.3.1 The Present Structure and Organisation of the Educational System :

The structure of the Greek Education under Law 1566/1986 is shown in Figure 1. Under this Law the six-year primary school maintains its independence and continues to issue certificates. The upper cycle of secondary education (gymnasio and lyceum) is comprised of general, technico-vocational, multibranch lyceums and technico-vocational schools. The entrance examinations from gymnasio to lyceum are abolished. Primary school graduates also enter the 'gymnasio' (lower secondary cycle) without entrance examinations.

The compulsory schooling requires pupils to attend school from the age of approximately six to the age of fifteen, which is nine years of compulsory schooling. Nursery education is also provided but it is non-compulsory.

Figure 1

The Structure of the Greek Educational System in 1986.

DIAGRAM REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES



(adapted from Bousakis, 1986, p. 126).

1.2.3.2 Primary Education:

Throughout the country there are 3158 primary schools, ranging in size from one-teacher (monothesia) and a few pupil rural schools to several hundred pupil schools. Private schools total 400, the remaining 2758 being state schools. Table 1 shows the number of private and state schools within the greater Athens area (and separately for each of the four educational districts), where this study took place. It may be noted that a sizable minority of schools are private.

Table 1
Number of State and Private Schools within the Four Educational Districts in Attiki

Educational Districts	State Schools	Private Schools	Total
Centre	293	24	317
East Attiki	173	48	221
West Attiki	175	11	186
Pireas	275	35	310
Total	916	118	1034

Primary schools cater for children from about 6 to 12 years of age and provide six consecutive years of schooling. The child is admitted to the first grade of the elementary stage at the age of 5 years 6 months by first of October of the year of admission.

During the primary school years children are taught Greek language, Mathematics, Science, Social Studies and Religious Education. Physical Education, Music, Art and in some schools Foreign Languages are also part of the curriculum. School hours are either 8.30 a.m. to 1:00 p.m. or 2:00 p.m. to 6.15 p.m. if the school building is used in two shifts. This is often the case in big urban areas, where due to shortage of school buildings, two schools may share the same building working in morning and afternoon shifts. That is, one week one school works during the morning and next week during the afternoon, while the opposite holds for the second school.

During the last three years a new scheme was introduced in some schools, mainly in big cities, the so-called 'experimental' schools. In these schools, children are taught foreign languages, art, music and physical education by extra subject teachers. The timetable of such schools is extended by half an hour a day.

Teaching in the Greek Primary school is class-based. The class teacher teaches most if not all the subjects. Despite the fact that the new curricula claim to change the pedagogic relation between teachers and pupils by making the teacher a 'facilitator' in the learning process, what is actually happening is that pupils are addressed as a homogeneous whole. They are taught the same material, at the same pace, at once and everyone in the class is expected to complete the same work. There is little individualization whatsoever.

The teacher dominates the interaction in the classroom by determining who shall speak, to whom, when and how. Opportunities for student interactions are very few. The dominant form of instruction is recitation which allows the teacher to manage the classroom in ways that leave little room for dispute or discussion. The explicit concentration on skill acquisition further accentuates the dominant-subordinate relationship of teacher to student. The teacher clearly emerges as someone who initiates, monitors and evaluates, while the student waits, listens and responds.

Greece has a strongly framed national curriculum leading up to national exams at the end of the six years of secondary cycle. Assessment in primary school though is infrequent and informal. Annual promotion is automatic in the primary school, even if students do not reach the level of content mastery. Reports are given once a year, where instead of grades the characterizations 'very good', 'good' and 'almost good' are used for all the taught subjects.

Courses are taught by primary teachers whose training before 1984 took place in Teachers' Training Colleges (Pedagogical Academies) and lasted two years. However, since 1984, the Pedagogical Academies were abolished and the training is now provided within the universities, while the training period was extended to four years.

In spite of its pretensions to enable each child to achieve his potential and its claims to be concerned with the development of each individual as a whole, the Greek Educational system clearly favours intellectual-academic aims, with an overemphasis on subjects such as Language and Maths which are considered 'primary subjects' and a complete neglect of others such as art, or music. M. Tzani (1983) in her book about the causes of school achievement argues that education in Greece

"ignores essential learning and consists of a continuous preparation for the ultimate aim which is the acquisition of a university degree" (p. 27).

She goes on to stress that school achievement has only one meaning: to get good grades. This will guarantee a successful academic career.

" 'I am learning' is equivalent with 'I am memorizing', and 'I understand' means 'I am able to remember easily'" (p. 25).

1.2.4 Special Education in Greece :

Special education is the educational sector which has experienced greatest change in recent years. In this section the development of the field will be presented first followed by a discussion of current provisions and practices.

1.2.4.1 The Development of Special Education:

The development of educational provision in Greece for children with special educational needs, has followed a pattern similar to that in other Western countries. It began as an individual and charitable enterprise. Before 1970 only some isolated examples of private provision could be found in Athens, while elsewhere very little has been achieved.

Following similar tendencies in Western countries, in the first half of the 20th century, private charitable organisations established the first institution for the physically handicapped, where disabled individuals of both sexes would be accepted. These early establishments aimed more at training than at education. The provisions made during

this period were characterized by a tendency to institutionalize and isolate disabled people, and were based on the belief that institutions would constitute the best solution for an effective protection and treatment of these people whom the Greek society was rather unready to accept at the time (Stasinos, 1991). Children and adults with various disabilities were almost totally isolated and marginalized and were regarded as "*abnormal*", "*unable to face the demands of life*" and "*in need of constant supervision and guidance*" (Stasinos, 1991, p. 99). The family's role in the upbringing of these children generally seemed to be rather negative. The parents were either indifferent or rejecting, anxious to put children away in an institution so that they could free themselves from the social stigma of having a disabled child.

Attempts to educate mentally handicapped children were first made in 1937 with the establishment of the first special school in Kesariani (Athens), known as the 'Model Special School' of Athens. Until 1972, this was the only state school administered by the Ministry of Education. The school accepted educable, mentally retarded school age children. Those who were blind, deaf, epileptic, profoundly retarded or suffering from contagious diseases were excluded from attending the school. At the same time Law A.N. 438 was legislated, and the establishment of a Special Education Office within the Department of Education, as well as the establishment of a number of special schools in several cities was decided.

Since 1950 an intensification of the efforts of both the private sector and the State has been witnessed, not only as a result of changing policies and philosophies but also as the result of a pressing demand to face the diverse problems created by the recent war. More importantly the attitudes of the society in general were changing; there came a greater recognition of the rights of those with special needs as members of society. Several special schools and institutions were established and administered by the Ministries of Social Services and Justice as well as by private initiative. Such institutions were, for example, the Theotokos Institution for the protection of maladjusted children (in Agios Anargyros, Attiki), the Stoupatheion Institution for

maladjusted children (in Marousi, Attiki), and the Psychological Centre of Northern Greece (in Retziki, Salonica).

Also since 1950, a number of scientific societies devoted to handicapped children have been founded in Greece, e.g. the 'Greek society for Child Mental Health and Neuropsychiatry'. In addition, many Child Guidance Clinics were set up during this period to help children with behavioural, personality or mental handicaps and provide guidance for their parents. Such help appeared to be basically diagnostic and consultative in nature.

1.2.4.2 Current Provision:

The formal history of special education in Greece starts in 1969 with a number of administrative and educational measures taken by the state. First the Special Education Office in the Ministry of Education was established. At the same time, initially a six months and later a year long course started in the Didaskaleion Of Primary Education in Athens (Marasleion). It aimed in providing primary school teachers with training in special education. In addition, 45 state educational units, officially called special schools were established by the Ministry. These schools or units (four with 4 teachers, five with 3, and thirty six with 2 teachers) were opened in cities with Pedagogical Academies (Teacher Training Colleges) as well as in some other large urban centres throughout Greece (Stasinou, 1981). These schools, although officially called special schools, were basically 'special classes', sharing the same building and resources with the normal classes, but using special teachers and a special curriculum.

In 1975-1976 in-service training of teachers in Marasleio became a two-years training in special education and with the Law 227/75 the Special Education Office was changed to Department of Special Education and then to Directorate of Special Education. A committee was formed which started working on the legislative framework of an Act for Special Education. This Act (Law 1143/1981) mirrored the educational policy of the government which aimed at keeping Special Education completely segregated from

regular education. The Law was severely criticized as stressing categorization, dividing individuals to 'normal' and 'abnormal' marginalizing and, therefore, devaluing certain groups of children and adolescents with special needs.

After the elections of 1981 the new government initiated two Education Acts (1981, 1985) with a bearing on Special Education. Law 1566/1985 specified the categories of children considered in need of special education, the requirements for effective assessment, the bodies by which assessment will be done, the types of special educational provision, teachers' training and education and the bodies responsible for advice and support in the area of special needs. An integration policy was adopted as a result of a changed policy from a categorization process to a more sensitive recognition of individual needs and the acceptance of a wide range of ability levels. This resulted in a greater concern for children with special needs and a rapid expansion of special schools and particularly special units within ordinary schools started in 1981.

From the academic year 1983 - 1984 the Ministry of Education started applying the idea of integrating children with special needs in regular schools, especially those with learning difficulties. It was argued that most of these children present minor problems which could be faced within regular school. The practice of establishing special schools was, abandoned, therefore, on the basis of the belief that the needs of the children would be better provided for within the special class which would not isolate these children from their peers for long periods of time. This philosophy of the Ministry is reflected in the rapid establishment of special classes the number of which increased considerably over the last five years.

The statistical figures given by the Department of Special Education for the academic year 1988 - 1989 show 6381 children with special needs within the total primary school population. A striking figure of this total is that the largest group is the pupils with learning difficulties (3352, Table 2). It is also roughly estimated that about 10% of the total school population (consisting of 180,000 children between 4 - 18 years of age) will present problems at some time or other in their school career and they will need special help. However, it is stated that the majority are unlikely to have a long-term

disability and their needs could be catered for within the regular classes (Special Education Information Bulletin, 1988).

Table 2

Student Population by Type of Problem and Type of School (academic year 1988 - 1989) *in Greece*.

Type of Problem	Type of School		
	Primary	Secondary	Total
Mentally Handicapped	2100	135	2235
Physically Handicapped	266	133	399
Deaf and Partially Deaf	476	231	707
Blind	106	-	106
Maladjusted	81	49	130
Learning Difficulties	3352	-	3352
Total	6381	548	6929

In section 32 of the Education Act of 1985 (1566/30-9-85) it is stated that learning disabled children constitute one of the ten categories of children with special needs. However, the category of learning disabilities appears ill-defined. *"...these children have specific learning difficulties (dyslexia, language disorders etc.) or they are difficult to adjust"* (Special Education Information Bulletin, 1988, p.15).

The category is a loose one and clearly favours the view that the disability resides within the child. This can easily become a deficit or defect in the child and carry with it the effect of labelling. It should be noted that no reference is made to specific eligibility guidelines. Informally there is a widespread acceptance of the discrepancy criterion, that is, an unusual and unexpected discrepancy between their supposed intellectual ability and their levels of attainment. Again procedures for operationalizing this concept are non-existent. Given that intelligence tests are not in frequent use and standardized achievement tests are totally lacking, it is quite easy to make the point that in practice,

children identified as LD present what Stanovich (1989) calls 'garden variety' achievement problems rather than any cognitive specificity. Also there are definitely those who have not been diagnosed as such and remain without special assistance in their regular classes.

Under the 1985 Act, the identification of children with learning difficulties is considered the task of multi-professional groups, including a medical officer, a psychologist, a social worker and a special needs teacher. Informally the identification of such children is done by the special needs teacher in cooperation with the regular class teacher and the counselor of special education. In most cases the deficit would have been identified by the classroom teacher. After initial identification, the next step would be to have a consultation with the special needs teacher. In some cases where a particular difficulty is noted there would be a multi-professional assessment of the child in a centre. However, the great majority of assessments are made by non-standardized procedures by the special needs teacher. A placement decision cannot be implemented without the parents' consent. If the parents consent, the child starts attending the so-called 'special classes', that is, he receives part-time assistance for 5 - 7 periods a week and only in rare circumstances these periods could be extended to 10 periods per week (Hristakis, 1989).

Teaching in special classes takes place either individually or in small groups depending on the child's needs. The usual cause for inclusion in the special class is deficiency in one or more school subjects. In most cases the problem area is reading. According to the figures given by Hristakis (1989) for the first district of Special Education in Athens, from the 305 pupils attending special classes in the academic year 1986 - 1987, 51.15% had problems in verbal achievement, 40.20% had problems in Mathematics, and 42% had problems in both subjects.

Special classes are mainly designed for pupils with mild handicaps or moderate learning difficulties. In few instances children with serious physical and/or emotional handicaps are also included in the special classes. It should be noted that the 'Special Class' provides a basic skills training with very low expectations. The curriculum used in

special classes is the ordinary curriculum with some modifications. Pupils follow the same basic work as their classmates but some modifications may be made to the material or alternative, supplementary activities may be added to meet the pupils' needs. LD programs exist at the primary level only. The reasoning being that if high-risk students are identified and given appropriate instruction early, the deficits would be remedied. The deficits observed in basic skills are those which receive direct attention. There also exists an informal policy to include in special classes mainly children from the first three grades, the assumption being made that these would be the ones who would mostly benefit from the program. The number of children who attend the special class in a particular school does not exceed 20 at any one time, even if there are more children in the school in need of special education.

Stasinos (1991) points to an impressive increase in the number of special classes and the number of children considered as having learning difficulties during the last decade, but especially in the academic year 1988 - 1989. He reasons that this increase is probably related to recent policies about special education and especially the emphasis put on integration of children with special needs in ordinary schools.

According to the Bulletin of the Department of Special Needs of the Ministry of Education (1988), there are 87 schools with special classes attached to them in the greater area of Athens and Pireas. Their distribution within the three educational districts in the county of Attiki and Pireas is shown in Table 3. The sample of this study was drawn from six schools, three of them located in the centre of the city, two in East Attiki and one in West Attiki.

Table 3

Distribution of State Schools, Private Schools and Special Units in the Greater Area of Athens and Pireas.

Location	State Schools	Private Schools	Total	Special Units
Centre	293	24	317	24
East Attiki	173	48	221	14
West Attiki	175	11	186	27
Pireas	275	35	310	22
Total	916	118	1034	87

1.2.5 The Importance of School Success within the Greek Society:

An intense focus on education characterizes the Greek society as a whole which dates back to the 19th century, a tendency attributed to the belief that education constitutes the only vehicle for social mobility and progress (Moustaka, 1964; Tsoukalas, 1977). This emphasis on education has become a ruling national ideology, and its importance is stressed by parents, teachers and the textbooks used at school.

The Greek family generally emerges in a variety of studies as a child-oriented one (Katakis, 1978; Vassiliou and Vassiliou, 1970). A great part of its activity and planning aims at securing the means for the child's advancement, on which the family's advancement is based. The child is seen as the agent for the actualization of plans from which the whole family is expected to benefit. Planning, especially as regards the education of the child becomes a family affair, for the prestige of having an educated child will reflect on the social position of the whole family. Children are loved, protected and provided with goods and comfort, having no other responsibility towards their family except achievement at school. (Vassiliou and Vassiliou, 1982). The father produces money through wages, the mother is either doing the same, or is wrapped up in her household activities, while the child consumes the parents' earnings and is 'being

educated'. Children are pushed towards academic excellence, as this constitutes an important source of pride for the entire family, while academic failure is considered a stigma.

In school, children are thrown into antagonistic relations, in a context of overemphasized academic competition. The child does not live, but he is preparing himself for life, his only qualifications being his degrees (Katakis, 1978). Competition for a place in the university and other similar institutions is intensely pressured. Several research studies show that the university degree, for both children and parents, is conceived of as the only way leading to success. In a study conducted by Batha et al. (1982) regarding the influence of cultural variables on school achievement in the first two grades of primary school, it was found that 51% of Athenian mothers from different socioeconomic backgrounds, stated that they hoped their children would attain a university degree. It is obvious that this "distorting and utopian" character that school achievement has for Greek parents may create an unbearable pressure for many children. Moreover, failure is regarded by disillusioned parents as a "terrible betrayal" rather than the result of the objective ability of the child. Considering the above argument, it comes to no surprise that the results of a study by Tsiandis et al. (1981) concerning suicide attempts by children and adolescents in Greece, mention conflict with the family and pressures for academic success as the most frequently cited reasons.

M. Tzani (1983) speaks of a 'psychosis of the good grades' which characterizes Greek parents.

"The teacher faces the 'good student' in a completely different way and the relatives and friends are proud of him. Family gatherings are transformed into a place of a competitive display of the marks of the young offsprings of the family. The child's conduct at school is dependent on his achievement and his appreciation by his parents' and teachers' is also closely related to his academic success. We do not exaggerate when we speak of a real psychosis of grades in Greece" (p. 26).

Georgiou-Nilsen (1980) in her book 'The Family through the Elementary School Textbooks' points out to the frequency with which the topic of school achievement

comes up in the children's textbooks. Education, states Nilsen is presented as synonymous with school achievement and social status.

In the light of all this, it would be expected for Greek children to employ academic achievement as a very important index of self-worth. The risk involved in using such criteria is thought to be even greater in the context of the Greek classroom with its uniformity of instruction and group orientation which leaves little or no space for individual variation in achievement.

1.2.6 Conclusions:

Clearly the existence of learning disabilities is a school related phenomenon and as such would be in close correspondence with the particular educational system. An education system which is characterized by rigidity and an authoritarian structure as is the Greek educational system would serve to intensify children's learning problems. Several features of the Greek educational system in general and the Special Education in particular are thought to have a significant influence on children's way of learning and through this on their self-related beliefs and attitudes.

1. The existence of a national curriculum defined by a central body, as is the case in Greece, aims at ensuring that all children are offered the essential components of education. On the other hand, this rigid specification of the curriculum, makes the possibility of failure for many children more likely, given that many of them may not be able to follow it in the way it is prescribed. It remains to individual teachers to try to develop ways in which the content can be modified to allow for different styles of presentation and response. However, the typical Greek classroom with its lack of facilities and resources is more likely to intensify the inflexibility of the curriculum. In addition, school organisation does not favour ability grouping or individualized teaching which would help pupils with learning difficulties.

2. In a traditional classroom as is the Greek classroom, the way that school instruction is organized makes the social comparison process more salient. Because the teachers'

rating of their students in their everyday interaction with them is oriented primarily toward a social reference norm, good students almost exclusively would experience success, bad students failure. In addition, the public evaluation inherent in teacher-centered instructional practices such as recitation would further influence children's status in the classroom (Weinstein, 1991). A history of steady outcomes would, in turn, prepare the ground for differential levels of self-concept and definite attributional styles. Moreover, the overemphasis on basic subjects at the expense of an evenly spread attention to different areas of the curriculum probably serves to prevent academically unsuccessful students to alleviate threats to their self-esteem by deriving satisfaction from other areas.

3. The school starting age which is specified rigidly as 5 years 6 months seems to create difficulties in those children who are not mature enough to face school demands. Empirical research has shown that younger children are at risk of facing a greater incidence of behavioural difficulties and lower attainment in reading, writing, mathematics and greater difficulties in adjustment (West and Varlaam, 1990). Although the starting age has been hotly debated among educationalists since its establishment in 1965, no modifications or other provisions have been made so far.

4. The fact that nursery school attendance is non-compulsory seems to have a dual effect. Firstly, there is evidence that pre-school education seems to affect performance and adjustment. Woodhead (1985) in reviewing the long term effects of pre-school education in UK, notes that there is substantial evidence to indicate that such provision can have a positive effect on the cognitive development of the children who attend it. It also seems to be an effective form of intervention in disadvantage, effective not only in the short-term enhancement of abilities, but in the long term determination of life course. Thus, children who do not attend nursery school might be in a disadvantaged position as compared to those who attend it at the beginning of their school career. Secondly, non-attendance precludes an early identification of learning difficulties and therefore, the possibility of coping with the problem at this stage.

5. Overcrowded classrooms prevent teachers from spending more time with children facing learning difficulties. Although the number of children in each class is specified by Law not to exceed 25, in many instances it is 30 - 35 or more. This is particularly the case in disadvantaged areas where problems are worse. The pressure for time and the inevitable inability of the teacher to devote individual attention to those children most in need, is even more pronounced in one or two teacher schools.
6. The automatic promotion of children from one grade to the next irrespective of their progress serves to widen the gap between those with learning difficulties and their normally achieving peers as children grow older.
7. The programs and textbooks are designed with the average pupil in mind. Nevertheless, several educationalists (Hristakis, 1989) have pointed out that some of these books are too difficult even for the average learner. It is obvious that such textbooks would easily impede learning in children facing problems and would make them feel incompetent.
8. The absence of other professionals from regular schools such as speech therapists, educational psychologists etc. deprives children from the help they need and puts much strain on the class teacher who has to face the various problems alone without specialized help.
9. As already pointed out both parents and teachers typically stress academic success in basic subjects. Moreover, the child's school success is thought to have a bearing on the well-being of the whole family. This would place a tremendous pressure on children to succeed and at the same time would minimize the possibility of deriving satisfaction from success in other domains such as drama, sports, music etc.
10. The definition of learning disabilities is very general and can be used to refer to anyone who happens at any time not to be learning as well as his peers. In addition, it tends to emphasize the disabilities, rather than stressing similarities and ensuring integration. The focus on the individual child strengthens the ideology of a deficit model.

11. As already discussed, special classes typically provide a basic skills training. Therefore, children are restricted in the learning opportunities available to them. Moreover, the academic expectations of the children can be lowered as a result of special class placement, with an associated lack of progress.

12. There is the danger of stigmatization and loss of status which is considered particularly strong in the context of the Greek Educational system for two reasons: As pointed out earlier, the Greek society as a whole has for long been unsympathetic towards people with special needs and tended to devalue and marginalize them; secondly, the emphasis put on academic attainment would carry with it the potential of making those who fail vulnerable to negative labelling.

13. Finally, difficulties are created by the fact that the majority of primary school teachers and the totality of secondary school teachers had no training whatsoever in special education (Hristakis, 1989).

All this points out to the fact that children facing learning difficulties within the Greek Educational system might be more at risk of developing negative self-concepts and maladaptive attributional styles than children who find themselves faced with less pressure for academic excellence by parents and teachers and are surrounded by a 'multi-task' organization of classroom where achievement levels are less visible and less influential in determining their status.

1.3. The Concept of Learning Disabilities and its Relevance to this Study:

Given that one of the sub-samples of this study was constituted by children attending 'Special Classes' and characterized as having 'learning disabilities', it was considered necessary to shortly refer to the historical facts which resulted in the adoption of the term 'learning disabilities' in USA, and 'specific learning disabilities' in the UK. Such theorizing and research has influenced similar practices in Greece and has led to the

adoption of the term 'learning disabilities' (however general and unspecified), and the identification of progressively larger number of students as 'learning disabled'.

Over the past twenty five years the field of learning disabilities has witnessed amazing growth. It has become the special education category serving most individuals. Accompanying this growth there has been considerable confusion and disagreement over definition, aetiology and diagnosis (Chapman and Boersma, 1980; Chapman, Boersma and Janzen, 1978; Lerner, 1985; Smith, 1985; Torgesen, 1986).

The present lack of consensus in the field of learning disabilities can be understood by examining the emergence of the concept from a historical perspective. Detailed reviews of the history of the field are beyond the scope of this work and can be found elsewhere (Kavale et al. 1987; Lerner, 1985). Here it will suffice to present a sketchy account of the events that greatly influenced subsequent practice and theory.

The learning disabilities history is considered by many to begin in 1962 in the USA, when Kirk proposed the use of the term 'learning disabilities', leading to its adoption by the newly formed ACLD (Association of Children with Learning Disabilities) in 1963. But the origins of the field certainly predate 1963. Accounts of individuals who displayed specific learning disabilities have been documented since the early 1800s. Weinderhold (1974) divides the history of learning disabilities into three distinct periods:

- a) The foundation phase (1800-1930) which was marked by basic scientific investigations of brain function and dysfunction.
- b) The transition phase (about 1930-1960) when research findings about brain dysfunctions were applied to the clinical study of children who were not learning; and
- c) The integration phase (1960-1980) characterized by a rapid growth of school programs for the LD, and the use of a variety of theories and assessment techniques.

Early research moved from Goldstein's (1948) study of brain-injured adults to children who manifested similar behavioural symptoms. The first label attached to what would be later called learning disabilities was Strauss and Lethinen's (1947) 'brain injured child'. Their criteria included perceptual and conceptual disorders, preservation, soft

neurological signs, history of neurological impairment, and a lack of history of mental retardation. Although the concept of exogenous (brain injured) mentally retarded child evolved into the notion of learning disabilities, Kavale and Forness (1984) found little empirical support for the perceived differences between exogenous (brain injured) and endogenous (familial or cultural) forms of mental retardation. These findings are significant because the present day LD field owes much of its theoretical orientation to the presumed differences found by Strauss and Werner (1943) in their study of exogenous and endogenous mentally retarded children. On the basis of their findings, Strauss and Werner concluded that the effects of brain injury were manifested in a set of behavioural characteristics across a broad range of functioning. From these assumptions and a series of modifications, the concepts surrounding exogenous mental retardation evolved into the present day conceptualization of LD.

In 1968, the term 'learning disabilities' was selected from a long list of terms for inclusion in the 1969 Elementary and Secondary Act amendments (PL 91-230) in the USA. Under Kirk's leadership, the USOE National Advisory Committee on Handicapped Children (NACHC) presented the following definition:

"Children with special learning disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or using spoken or written language. These may be manifested in disorders in listening, thinking, talking, reading, writing, spelling and arithmetic. They include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia etc. They do not include learning problems which are due primarily to visual, hearing or motor handicaps, to mental retardation, emotional disturbance or to environmental disadvantage" (Kavale and Forness, 1985, p.49).

This definition has been criticised as vague, too general and ambiguous; as defining 'exceptional children' in general rather than the learning disabled in particular; as depending too heavily on exclusion to define its target population (Mercer, 1983).

In 1977 the United States Office of Education (USOE) proposed a new definition in Public Law (PL) 94-142 which stated that the categorical label was appropriate if an individual demonstrated a severe discrepancy between expectancy (defined as general estimated intellectual ability) and current achievement in one or more of the following

eight areas: oral expression, written expression, listening comprehension, reading comprehension, basic reading skills, mathematical calculations, mathematical reasoning and spelling. A final criterion was that no other handicapping condition or disadvantage could explain the observed disparity (Houck, 1984).

Not every organisation has been pleased with the USOE definition, however. The National Joint Committee for Learning Disabilities (NJCLD), comprised of professionals from six groups, issued another definition in 1981, which was basically a theoretical statement specifying the characteristics delineating the LD conditions. In this definition the word children was removed since the disability was thought to be exhibited at any age; the problem was presumed to be due to central nervous system dysfunction; spelling as a separate category was not included; and finally, it was clarified that although the diagnosis of learning disabilities is used when it appears to be the primary problem, it may coexist with other handicapping conditions (Houck, 1984). Hammill (1990) examined 28 textbooks on learning disabilities published between 1982 and 1989 and identified nine conceptual elements against which the definitions can be compared. These elements are the following.

- a. Underachievement determination.
- b. Central nervous system dysfunction aetiology.
- c. Process involvement.
- d. Present through lifespan.
- e. Specification of spoken language problems as potential learning disabilities.
- f. Specification of academic problems as potential learning disabilities.
- g. Specification of conceptual problems as potential learning disabilities.
- h. Specification of other conditions as potential learning disabilities.

He concluded from his analysis that, surprisingly, considerable agreement exists between the various definitions.

Evaluation of the primary definitional components of LD shows that each is problematic and difficult to be accepted unequivocally. Their validity has been criticized on several grounds. An element common in many definitions is the presence of academic failure,

that is, the identification of a gap between a child's potential and his actual achievement. The most widely accepted method for determining a severe discrepancy is a regression procedure which compares intelligence and achievement standard scores taking into account the regression of achievement on intelligence. Several writers (McLeod, 1979; Rutter, 1978) have pointed out, however, that regression effects and errors of measurement in the test scores themselves, as well as in the difference between any individual's scores on both tests are enough to produce this discrepancy. Moreover, there have been difficulties in measuring actual achievement based on standardized test scores and expected achievement usually based on intelligence tests (Salvia and Ysseldyke, 1985; Stanley and Hopkins, 1981).

Another aspect which has been criticized is the exclusion component. Many of the definitions state that the condition is not mainly the result of other causes. Such a limitation is often difficult to implement in practice. The exclusion of handicapping conditions such as mental retardation, hearing or visual impairment, emotional disturbance or problems resulting from environmental, cultural, or economic disadvantages are sometimes impossible to meet (Kavale et al., 1987).

Most definitions posit deficits in basic psychological processes which are assumed to underlie LD academic difficulties. This assumption has also been questioned. It has been argued that: measures of psychological processes assess hypothetical constructs and generally fail to demonstrate satisfactory construct validity; and that there is limited empirical support for these constructs and therefore it is difficult to determine whether performance differences are the result of real ability differences or the method of measurement.

The same debate concerning the definition of the psychoeducational and legal concept of 'learning difficulties' that was going on in the USA has been witnessed in the UK as well. The Warnock Report advocated that the term 'children with learning difficulties' be used to describe pupils categorized as educationally subnormal plus those who were typically the concern of various remedial services. It was also suggested that children

with 'specific reading difficulties' might be described as 'having specific learning difficulties' (GB, DES, 1978).

A subsequent survey of the research literature on children with specific learning difficulties had as a prime concern children manifesting severe reading difficulties, though problems with spelling, writing, arithmetic and speech were also considered (Tansley and Panckhurst, 1981). The authors proposed a definition of learning difficulties in the final chapter. It states:

"Children with specific learning difficulties are those who in the absence of sensory defect or overt organic damage, have an intractable learning problem in one or more areas of reading, writing, spelling and mathematics, and who do not respond to normal teaching" (p. 259).

In the Education Act of 1981 it was stated that a child has a 'learning difficulty' if;

- a. he has a significantly greater difficulty in learning than the majority of his age;*
- b. he has a disability which either prevents or hinders him from making use of educational facilities of a kind generally provided in schools...*

The apparent lack of specificity in these definitions of specific learning difficulties outline the controversy surrounding the concept and simply provide an administrative umbrella for the placement of children with broadly similar educational needs.

At present the LD field seems to be left with an unsettling situation. Theorists continue to see learning disabilities as a viable classification, even though they have to face some indisputable facts : aetiology behind learning disabilities has not been established; and methods of identifying the LD population have not been reliable. Kavale and Forness (1985) made a stringent criticism of the unreflected empiricism that characterizes work in the field of learning disabilities and argued that the field is 'a victim of its own history' and a 'pseudoscience'.

Reaction to the imprecise nature of the concept has led some researchers to question, not only the basic assumptions underlying the various theories about learning disabilities and the assessment procedures used to identify the learning disabled population, but whether a differential problem exists (Algozzine and Sutherland, 1977; Coles, 1978; Franklin, 1987; Sigmon, 1987, 1989). Several researchers criticized the

inability to reliably identify LD children from other categories. Ysseldyke and his colleagues have questioned the validity of many classification decisions, finding that school-identified LD and non-classified children were virtually indistinguishable. Ysseldyke, Algozzine and Epps (1983) found that over 75% of 'normal' students could be labeled LD, and about 25% of school identified LD students could not be classified as such. In line with this is the finding of Epps, Ysseldyke and Algozzine (1984) showing that given scores on psychometric measures, psychologists and resource teachers are able to differentiate between low achievers and students labeled LD with only 50% accuracy.

Sigmon (1989) traced the historical developments in the USA that have resulted in the term LD (learning disabled) and came to the conclusion that this category which has become by far the largest special needs category, providing children so labelled with a variety of 'special programmes', might not be in the best interest of the children themselves. He warns against the pitfalls of allowing labels, limited to within-child variables, to detract attention from policies and organizations that take account of the full social and interpersonal context in which learning difficulties arise.

More recent models have attempted to move away from exclusive biological explanations by stressing information processing, selective attention, and the interaction between characteristics of the individual child and classroom demands. There has been a shift of attention from the 'defective' individual to the social context. Even these models, however, have been criticized as essentially concentrating on the individual, not stressing enough the social context and its impact on the child and failing to capture the multiplicity of problems surrounding the LD condition (Adelman, 1989; Coles, 1989; Franklin, 1987; Sigmon, 1989).

Another point of view is put forward by those who advocate an 'interactional' model, stressing the reciprocal interplay between the individual and the environment (Algozzine and Sutherland, 1977; Coles, 1989; Hagen et al., 1982; Sigmon, 1987). Their position is that the individual's abilities may set broad limits on the amount or kind of information acquired. However, the individual interacts with a dynamic environment

which may constraint or facilitate the acquisition of knowledge. The context of the family, the social structure of the school, community values and structure, broader political and cultural factors, as well as other ecological factors have to be considered when approaching the problem of learning disabilities. It is also stressed that intervention which focuses primarily on the individual is inadequate; it should aim at more general changes in learning environments and systems or at changes in both the individual and the environment (Adelman, 1989).

This shift of attention that the LD field has experienced from the individual to the social context has not brought a change in the dominant theoretical model. Although the definition of LD gradually became more and more educationally oriented, the presumed aetiology remained the same, central nervous system dysfunction. Despite attempts to adopt an educational definition, theorists like Cruickshank (1983) continue to assert that, *"A definition of learning disabilities is based upon certain 'givens'all learning is neurological. It can be nothing else"*.

The best that can be said at present is that the term learning disabilities has become an umbrella term encompassing a cluster of disorders which manifest themselves in various learning and behavioural problems expressed in different ways at different age levels. Although there is no universally accepted definition of 'learning disabilities' or 'specific learning disabilities', a child who fails to reach a level of achievement, in, for example, reading or spelling that is predicted on the basis of measured intelligence, chronological age or grade placement in the absence of adverse exogenous factors, is often labelled as 'learning disabled'. There is considerable disagreement about the theoretical basis of such discrepancies (Stanovich, 1991). And even where there is a conceptual basis, measurement of this discrepancy remains controversial. However, the number of children characterized as learning disabled is progressively increasing. In the USA the number of such children is reported to range from 1% to 30% depending on the criteria used to determine eligibility (Lerner, 1985). In Canada it is said to be approximately 10% of the school population (Chapman and Boersma, 1980) and in UK the same figure is reported (Gurney, 1988). In Greece, no formal statistical figures

have been released; it has been roughly estimated that 10%-12% of the school population will present learning disabilities during their school career (Special Education Information Bulletin, 1988).

In Greece, the fact that there is no agreed upon conceptual or operational criteria for classification, the term 'learning disabilities' seem to be used in a great number of situations to refer to many problems and disorders of learning. The boundaries between children exhibiting 'specific learning difficulties' and underachievement tend to be arbitrary. Children falling at the lower end of the hypothesized normal distribution of attainment in specific subjects (usually reading) are diagnosed as having 'learning difficulties'. The prevalent criterion for inclusion in special classes is underachievement in one or more subjects. The concept of 'underachievement' is based on the assumption that there is an unexpected discrepancy between the standard of work that the child is producing and what is considered capable of producing. 'Underachievement' is, thus, related to the concept of 'potentiality' which is usually operationally defined by using the results of various tests of intelligence and attainment. Both the concept of potentiality and its operationalization remain generally controversial as already stated. There is no consensus as to which tests should be used in identifying children with specific learning difficulties. The argument has been recently made that discrepancy definitions of learning disability involving intelligence test scores represent a 'dead end' (Stanovich, 1991).

In this work, no attempt has been made to determine whether the Greek sample identified as eligible for special classes on the basis of their learning difficulties would have met more strict criteria for eligibility as learning disabled elsewhere. The concern here is the emotional impact of repeated failure and special class placement on the 'learning disabled child'. It is thought that prolonged failure and frustration will give rise to a diminished self-concept, by strengthening the view of one's self as ineffectual, powerless and impotent. Furthermore, in order to avoid anticipated blows to an already fragile self-concept, it is likely that the individual will 'externalize' responsibility for his actions and attribute the consequences of his behaviour beyond his control. This in

turn, is believed to lead to low-achievement expectations, and faulty cognitive strategies which would ensure further failure. Moreover, as failure accumulates with increasing age, school related affect would become more negative. As 'learning disabled' children are characterized by histories of academic failure, it seems likely that they will develop increasingly negative school related affect. Thus, remedial procedures designed to improve their intellectual achievement only would be insufficient to help them overcome their problems.

It is also hypothesized that as inclusion in special classes represents a formal acceptance of the child's academic failure and it is accompanied by low teacher expectations for future success and a less challenging learning environment (given that most special classes provide a 'basic skills instruction'), the child's self-related cognitions and affects would be greatly affected. Kronick (1976) refers to the process of altering a child's status from 'intact' to 'learning disabled', as entailing an alteration of self-image from one who can succeed to one who is a failure. This 'latent curriculum' would further threaten child's already shaky feelings of competence. The child might come to feel that he has no control over the situation. If this 'helpless' orientation towards the learning situation is developed, withdrawal of effort is likely to follow and motivation diminishes. This would further suppress academic achievement and would lead to more failure thus precipitating the vicious circle.

In this study the term 'learning difficulties' will be used to denote problems in reading, writing and maths which are directly linked to low academic performance. Because of the absence of a sound definition of 'specific learning disabilities' and the concomitant inability to classify children as 'learning disabled' on the basis of discrepancy scores or other criteria used elsewhere, the special class sample will be considered as having learning difficulties rather than specific learning disabilities.

1.4 Focus of this Study and Statement of the Problem:

The primary purpose of this study was to examine three constructs of interest (self-concept, locus of control and causal attributions) in relation to academic achievement in two groups of children: children in regular classes (RC) and children attending special classes (SC).

First, the comparative differences between the two groups in self-concept and control beliefs were examined through the use of MANCOVA and ANCOVA. Self-concept was viewed as a cognitive structure (Burns, 1982, 1986; Epstein, 1973; Sardin, 1962), and children eight years and older were considered able to make clear distinctions between their competence in different domains of self-concept, but they were also considered able to hold a global sense of self-worth (Harter, 1982). Therefore, in this research both specific subject-specific self-concepts, academic self-concept and global self-esteem were assessed. In addition the current investigation focused on generalized perceptions of control and specific attributions. Two dimensions of perceived control were examined. The degree to which children say that

- a) their own attributes bring about academic outcomes (internal control); and
 - b) that other people's attributes bring about these outcomes (powerful others control).
- Ability and effort were investigated as specific causes for successes and failures, as research specifically dealing with classroom attributions has shown that these are the most frequently cited causes for academic success and failure (Frieze, 1980; Weiner, 1979).

A history of success and failure was considered vital in shaping children's perceptions of their abilities, their perceptions of control and the causal ascriptions they would use to explain their academic successes and failures. Furthermore these self-perceptions were thought as further influencing many cognitions that would mediate behaviour in achievement settings.

Initially comparisons were made between the two groups (Special and Regular Class children) but subsequently it was considered necessary to subdivide the Regular Class

into Low (LA) and Normally Achieving (NA) children and compare the three groups on the constructs of interest.

A second purpose of this study was to attempt to determine the pattern of interrelationships between the constructs of interest within each group. This was done by correlational and path analyses. Furthermore, since much attention has been given in recent years to certain demographic variables, such as age, sex, socioeconomic status, these were also evaluated, although they did not form a central focus of the present research. More particularly, age and sex effects were examined, while the influence of socioeconomic status was held constant as research shows that it might be an important mediator in self-concept/academic achievement interactions (Caslyn and Kenny, 1977; Trowbridge, 1972).

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Chapter 2:

Review of Literature and Research:

2.1 Overview:

This chapter reviews the literature and research relevant to the problem addressed in this study. In subsequent sections self concept and locus of control will be examined separately and the literature pertaining to these variables and their relation to school achievement will be reviewed.

The first section deals with general theoretical approaches to self-concept. The section ends with Epstein's (1973) theoretical formulation which is considered to be an attempt to incorporate phenomenological views on the self-concept within an objective framework.

The next section discusses the definitions and conceptualization of self-concept, and the dominant theoretical models. A brief discussion on the origin and development of self-concept follows with special reference to middle childhood years. The measurement of self-concept is briefly discussed next, particularly in reference to the difficulties encountered in the measurement of general self-concept. Subsequently self-concept is examined in relation to academic achievement, locus of control and causal attributions.

The final part of this chapter includes a review of the relevant studies, followed by a discussion of the theoretical model adopted and the hypotheses investigated in this study.

2.2 Self-Concept : Brief Historical Perspective and a Review of Some Key Theories.

The term self concept is of 20th century origin but the notion of 'self' laden with metaphysical concepts such as 'soul', 'will' or 'spirit' has been the focus of study for many writers and thinkers for centuries. The upsurge of behaviourism in the 1920's

had as a result the disappearance of the self as a theoretical and empirical concept. However, with the retreat from the hard-line behaviourist position which commenced in the late 1930's, self constructs were brought back within the domain of psychological study.

The notion of the self has played an important part in the psychological theories of James, Freud, Mead, Allport, Lewin, Rogers and others. It has also occupied a central place in the work of the phenomenological school which gave a central place to conscious feelings, cognitions and perceptions that the individual has of himself and his world.

Nash (1976) identified three traditions of self theory. The first stems from the work of Freud and his followers. The concept of ego in Freudian theory had much in common with the notion of self as viewed by other theorists. Freudians emphasized both conscious and unconscious elements in the development of the self. Thus, the mechanisms of defence, and the relationship of consciousness to the external world became topics of interest for the self-theorist.

The second is contained in the work of James, Mead and their followers. The self in this theory arises out of interaction with others. This interactionist perception of the self makes it social in origin, and it stresses the situational specificity of it and its relativity.

The third tradition is that which sees the self as a trait of the individual's personality. Coopersmith's (1967) work on self-esteem reflects this view in that he considers self-concept to be relatively stable. Although Coopersmith attempted to measure self-esteem in context -home and school-, he also argued that once the child internalizes a view of himself from his parents and lately from his school experiences, this view becomes relatively enduring.

The literature related to self referent theories is vast, and it would be impossible to examine all approaches in depth. Therefore, an outline will be presented here of the contribution of those writers whose theorizing has influenced more recent approaches to the study of self concept. At least three theoretical positions are of special interest; the

writings of James and Mead, Freudian and Neo-Freudian theorizing and the phenomenological approach to psychology.

2.2.1 William James :

James (1890) is credited with elaborating the distinction between the 'I' and 'Me'. He contrasted the self as actor or subject, the 'I', and the self as an object of one's knowledge, the 'Me'. He considered the global self as simultaneously Me and I. James saw no value to the self as knower for understanding behaviour. He claimed that the self as Known or Me is of utmost importance. He stated that the empirical self comprises four components which are classed in descending order as spiritual self, material self, social self and bodily self. By 'spiritual self' he meant thinking and feeling. He stated that this is the center around which all other aspects of self cluster; it is considered the source of interest, effort, attention, will and choice.

James did not distinguish between material and social selves in terms of importance. He argues that a person has as many different social selves as there are individuals and groups about whose opinion he cares, and also that there may be conflict between some of the social selves. He states that the material self consists of the clothing and material possessions we regard as part of us. For some people, the material self is a significant portion of their entire self concept. He argued that our social and material selves are concerned with enhancing self esteem and serve social ends, involved in obtaining admiration, notice of others, powers etc. James places the bodily self last in importance. According to him, these four selves combine in unique ways to constitute each person's view of himself, and cannot be neatly separated.

Self-esteem is the second aspect of self-concept that was given particular prominence by James. He stated that the level of a person's self evaluation or self esteem is determined by the position the person holds in the world contingent on his success or failure. Although people would like to maximize all their various selves, this is impossible due to limitations of talent and time, and therefore they choose particular

selves to enhance. Having chosen, their level of self-regard can be reduced only by deficiencies (or raised by achievements) which are relevant to their 'pretensions'. James expressed this idea in his now famous formula :

$$\text{self- esteem} = \frac{\text{success}}{\text{pretensions}}$$

He saw our feelings of self worth and self esteem deriving partially from our perceptions of where we see ourselves standing in relation to others whose skill and abilities are similar to our own self-images. He also saw expectations as self imposed and referring to people's personal levels of aspirations, for what is success for one can be failure for another. He further argued that low self-esteem can be raised by obtaining greater success, or by lowering aspirations. Such a statement can be seen to have clear implications for education.

James's ideas and particularly his distinction between the 'I' and 'Me' aspects of self and his analyses of the role of affect in the self-evaluation process provided the ground work for subsequent theorizing. The duality of self proposed by James was also elaborated by Cooley and Mead but in a different way from James's formulations. These two theorists stressed the role of society in the development of the individual.

2.2.2 Symbolic Interactionism :

The basic idea of interactionism is that self and society form an inseparable unit. While it is possible to separate self and society analytically, the interactionist assumption is that a full understanding of one demands a full understanding of the other, in terms of a mutually interdependent relationship. Cooley's and Mead's ideas will be examined briefly as the most influential in the field.

2.2.2.1 Cooley:

In contrast to James who focused exclusively on individual's own evaluations, Cooley (1902) concentrated principally on the aspect of self James termed 'Social Me', arguing that the origins of self were primarily social in nature. Cooley's original view was that individuals are prior to society, but later on he modified his views arguing that self and society mutually define each other so that

"self and society are twin born and the notion of a separate and independent ego is an illusion" (p.5).

Cooley was the first to point out the importance of subjectively interpreted feedback from others as the main source of data about the self. He postulated that the individual is motivated to appraise others' attitudes toward himself, opinions that he eventually incorporates and that become his own sense of self. In 1902 he introduced the concept of 'the looking-glass self' to denote that an individual's concept of himself is entirely, or largely, determined by the reactions of others to him in the course of social interaction.

2.2.2.2 Mead:

Drawing upon James's and Cooley's notion of the self, Mead (1934) has been particularly important in elaborating the origins of self-concept by offering the first systematic description of the development of the self. He argued that the self is constructed actively by the infant. He considered the self as an object which arises in social interaction as an outgrowth of the individual's concern about how others react to him. He described the process of taking the role of the 'generalized other' as a way through which the social process and culture patterns are assimilated into the individual. In this way the individual comes to respond to himself and develop self attitudes consistent with those expressed by others in his environment.

Mead believed that language development was intimately linked to the self-system. More specifically, he contended that language provided the means to take the

perspective of others, to perceive the self as an object, and to differentiate between self and others. He, like James, assumed that there are several selves which vary with the particular social context in which the individual finds himself. This implies that there are situational determinants of various selves, an implication which has greatly influenced subsequent theorizing. He also implied, however, that the individual has a sense of self which is situation -dependent, and derives from a number of 'specific selves'.

He also distinguished between the 'I' and 'Me' aspects of self but in a different way from James's formulations. Mead's 'I' is the impulsive , unorganised, undisciplined activity of the individual. Every behaviour starts as an 'I', but develops to a 'Me' as it comes under the influence of societal constraints. In essence, Mead conceptualized the self as a cognitive structure that arose out of interaction with the world.

Mead's writings have especially impressed themselves upon those concerned with the role of self-concept variables in determining educational performance, for two main reasons. Firstly, Mead's model assumes that the self plays a determining role in human activity. The meaning that the self has for an individual will, at least in part, determine, the way in which that individual behaves. Secondly, the strong emphasis placed upon the social origin of the self-concept points to the experience of school as a potential source of self-definition.

Despite the vagueness in terminology which characterized these early theorists, their ideas had a lasting influence on subsequent theorizing in the field.

2.2.3 Freud, Jung and Neo-Freudians :

While James and Mead are usually given a prominent position in any discussion of the educational relevance of self-concept variables, there are many other theorists who had made important contributions in the field.

The second influence on theorizing in this area was the theory put forward by Freud and the Neo-Freudians. Freud (1923, 1946) himself did not particularly give the self a

central part in his theory. He conceived a more global construct of the self which included the 'ego', the 'superego' and the 'id' within it. The ego was thought to be learned as a result of transaction between the individual and his environment and was conceived as operating mainly at the conscious level. Self, on the other hand, was thought as incorporating both conscious and unconscious elements. He did not, however, discriminate consistently between self and ego.

Among the Neo-Freudians Adler (1927), Sullivan (1953) and Horney (1945) all made some important contributions to our understanding of the self. They emphasized socio-cultural situations and interpersonal relationships as significant in the development of self-as-object. Implicit in their views is that the self is learned through accumulated social contacts and experiences.

Especially the theoretical position of Sullivan (1953) is closely related to the ideas of Mead and Cooley. He argued that the individual, in the context of interpersonal relationships, is the recipient of a never ending flow of 'reflected appraisals' and that through the assimilation of these reflected appraisals, he comes to develop expectations and attitudes toward himself. Although Sullivan saw the self system as a result of interpersonal experiences, he emphasized mainly the role of the mother figure and not society at large.

The theoretical position of Erikson is given more attention here as one of those theorists whose ideas came to bear a particular influence on recent theoretical formulations about the self.

2.2.3.1 Erikson:

Erikson (1963, 1968) was the only one of the Neo-Freudians who paid attention to the self as object. In his view on identity he continued the accepted division of regarding the ego as a subject, the central organising agency, and the self as object so that self identity emerges from experience.

He provided an extension of Freud's theory emphasizing ego development in the cultural context. He indicated that identity is obtained from '*achievement that has meaning in the culture*' (Erikson, 1965, p. 228), and it arises out of a gradual integration of all identifications. He postulated an eight-stage developmental sequence of identity growth, detailing the particular conflicts which are characteristic of different stages and the qualities that emerge on the resolution of these conflicts. His process of identity formation is similar to the Cooley-Mead formulation concerning the role of the generalized other. But he sees this process as for the most part unconscious. He criticizes concepts such as self image and self esteem as providing a static view of what he considers an evolving process

'for identity is never established as an achievement in the form of personality armour, or of anything static and unchangeable' (1968, p. 24).

2.2.4 Phenomenological Approach :

The phenomenological approach gave a new impetus in the area by stressing the role of conscious self concept in determining a person's behaviour. It shifted the attention from an external to an internal frame of reference by focusing on subjective awareness, that is, on how individuals experience the world and themselves. Snygg and Combs were among the first theorists to adopt this point of view, while Rogers has probably been a major figure in this area whose ideas have greatly influenced contemporary thinking.

2.2.4.1 Snygg and Combs:

Snygg and Combs (1949) defined self-concept as

"those parts of the phenomenal field which the individual has differentiated as definite and fairly stable characteristics of himself" (p. 112).

They contended that behaviour could be best understood by taking account of the world of immediate experience. In their view

"All behaviour, without exception, is completely determined by and pertinent to the phenomenal field of the behaving organismBy the phenomenal field we mean the entire universe, including himself, as it is experienced by the individual at the instant of action" (1949, p.15).

2.2.4.2 Rogers:

Rogers' self theory has a great deal in common with the views of Snygg and Combs. His ideas about the 'fully functioning' individual represent a synthesis of phenomenology as developed by Lecky, Snygg and Combs, social interactionism and Sullivan's interpersonal theory. He stressed that the conscious awareness of the person is the most important source of knowledge about him, and therefore his internal frame of reference is the best vantage point of understanding his behaviour. He defined self-concept as

'an organised configuration of perceptions of the self. . . ' (Rogers, 1951, p.136).

He stated that the self-concept includes only those characteristics of the individual that he is aware of and over which he believes he exercises control. An important part of his theory is his assertion that there are two primary sources of the concept of self. One is the individual's experiences; and the other is evaluation of self by others. He considered the need for consistency and the need to maintain and enhance the self as two of the most important features of self.

Rogers pointed out that whether learned or inherent, a need for positive regard from others develops or emerges with the self concept. When positive regard depends heavily on other's evaluations, discrepancies may develop between the experiences of the organism and the needs of the self concept for positive self-regard. The individual, then, employs defensive processes to cope with a state of incongruity between the organism's experience and the existing self concept and this may lead to maladjustment. Burns (1986) summarizes the basic premises of the phenomenological approach as developed by Rogers as follows:

a) Behaviour is the product of one's perceptions;

- b) These perceptions are phenomenological rather than real;
- c) Perceptions are related to the existing organisation of the field which is structured around self-concept;
- d) Behaviour is regulated by self-concept;
- e) The self-concept is relatively stable over time and situations;
- f) Defence strategies serve to prevent incongruities between self-concept and immediate experience; and
- g) There is only one basic drive, that of self actualisation (Burns, 1986, p. 48).

2.3 Current Contributions to the Study of the Self: The Self as a Self-Theory:

The view that the self can be thought of as a theory constructed to organize one's thinking about one's relationship to the social world, has been advocated by many theorists (Brim, 1976, Epstein, 1973; Kelly, 1955; Sarbin, 1962).

In Kelly's view (1955) the personal constructs which represent the individual's personal version of reality function as postulates in a theory that serves to organize and guide behaviour. Brim (1976) took this analogy further by stating that

"What humans learn during life are axioms, concepts, and hypotheses about themselves in relation to the world around them. We can think of the sense of self as a personal epistemology, similar to theories in science in its components and its operations, but dealing with a specific person" (p.242)

Sarbin (1962) shared the focus of the previous theorists on process, emphasizing the self as an empirically derived cognitive structure which is subject to continual and progressive change.

2.3.1 Epstein:

Epstein (1973) has provided the most elaborate analysis of the self as a self-theory. He argues that the self-concept is a theory that the individual has constructed about himself

as an experiencing, functioning person; this is part of a broader theory which he holds with respect to his entire range of significant experiences. The self-theory, according to Epstein, enables the individual to organise and interpret experience in a manner which can be coped with effectively. Other functions include keeping the pleasure/pain balance and facilitating the maintenance of self-esteem.

Epstein's theory implies an organization of concepts at various levels of generality. He argues that under a postulate evaluating overall self-esteem, there will be second-order postulates, relating to general competence, moral self-approval, power and love-worthiness. The lowest order postulates would include specific abilities in a particular domain. This assumption that the self-system is differentiated into parts which have a certain degree of independence does not imply that these parts are totally independent. On the contrary, it is assumed that the different parts influence the more general aspects of the self-system. He states that as one moves from lower to higher order postulates, these become increasingly important to the maintenance of the individual's self-theory. In Epstein's theory affect occupies a central position. This emphasis on affect is one feature that distinguishes his view from others who saw self-concept as a self-theory.

There are other interesting theoretical formulations which were brought to bear on the self. For example, Markus (1980; Markus et al., 1990) proposed that attempts to organize, summarize or explain one's own behaviour will result in the formation of cognitive structures about the self, which she terms self-schemata. A schema is hypothesized to have a dual nature, to be at once a structure and a process. As such, it may have the capacity to represent the self as that which is both known and knower, 'I' and 'Me'. Markus emphasized particularly the way in which isolated self-schemata in the form of single-trait labels affect how information is processed and retrieved.

2.4 Some Key Issues in Self-Theories:

Having reviewed several theoretical positions on the nature of self-concept, it is possible to identify the main characteristics attributed to it by the different theorists. Gergen (1971) points out to five key issues which will be discussed briefly.

2.4.1 The Self as Fact versus Fiction:

Theorists have been inclined to speak of the self as if it had substance. The term self-concept is often treated as if it refers to a thing. It has been variously referred to as 'parts of the phenomenal field' (Snygg and Combs, 1949), 'regions of our life' (Allport, 1955) and 'an interpersonal entity' (Cooley, 1902). It has been said to have a 'structure' and 'components' (James, 1890). However, it is entirely misleading to think of the self in the same way as a physical object. It is much more useful to think of it as a hypothetical construct which is useful in explaining and predicting human behaviour. Rosenberg (1979) advised remembering that the self-concept is not the 'real self' but, rather, 'the picture of the self'.

2.4.2 The Self as Knower versus Known:

Over the years one fundamental distinction has come to be recognized -that between the self as subject or agent, and the self as object of the person's knowledge and evaluation. Both James and Allport believed that it was the self as an object of knowledge that was important in understanding and predicting behaviour. In contrast, other theorists (e.g. Freud) stressed the view of the self as a process of active experiencing. Although the notion of the self as knower had a strong tradition in psychology it has been suppressed by the notion of the self as an object of experience. The term 'self-concept' is used by many writers to refer to the 'Me' aspect of the self, the self as a perceived object (Burn, 1986, Rosenberg, 1979, 1986), while the term

'self' is considered a more global and more inclusive concept embracing both the 'I' and 'Me' elements, or what James termed the 'stream of consciousness'.

The phenomenological approach tried to blur this distinction between self as known and self as knower by postulating self-actualization as the sole human drive. Similarly Markus (Markus and Wurf, 1987) postulated the self as a system of self-schemas and argued that these have the capacity to represent the self as that which is both known and knower.

2.4.3 The Self as Structure versus Process:

The distinction between the knower ('I') and the known ('Me') aspects of self had a further implication for the theory and research in the area of self-concept; it resulted in a distinction between structure and process. Structure refers to a relatively stable nature of self concept, while process refers to the changing nature of self-concept. The acting agent (the 'I' aspect) is associated with the process, while the reflecting agent (the 'Me') is associated with the structure. It has been difficult for many psychologists to maintain both aspects of the self in the centre of their attention, and therefore, some emphasized the structure of self-concept (e.g. Kelly, 1955; Rogers, 1951), in which case the self is treated as if it were a thing, having structural properties that give stability through time; others have emphasized the aspects of process which implies the principle of change (e.g. Markus and Wurf, 1987; McCall, 1977).

The difficulty of maintaining both structure and process in the centre of attention, is that generally it is held that if something is a process, then it is not a structure. Yet in Mead's (1934) theory of the self, the 'I' and 'Me' are not held against each other as mutually exclusive entities, but the 'I' transforms into 'Me', and the 'Me' transforms into 'I'.

Recently, structure and process have been conceptualized in a much more related manner. Piaget (1971) maintained that structures are both structuring and structured. In his view all kinds of structures have basically the same characteristics: they are organic

wholes; they are systems of transformation rather than static complexes; and they are self regulating systems entailing both self maintenance and closure. Self maintenance and closure mean that the transformation of a structure never leads beyond the system itself and the boundaries of the structure are preserved despite the emergence of new elements in such a structure.

Markus and colleagues (Markus and Sentis 1982; Markus and Wurf, 1987) stressed both structure and process in their theory by conceptualizing the self as a system of 'self-schemata' which can be restructured and activated by appropriate stimuli. Markus used the term 'working self-concept' to express the view that self-concept is both stable and changeable. She defines 'working self-concept' as the

"...self-concept of the moment, (which) is best viewed as a continually active, shifting array of accessible knowledge" (Markus and Wurf, 1987, p. 307).

She argues that the core aspects of the self may be relatively unresponsive to changes in one's social environment because of their importance in defining the self and their extensive elaboration; in contrast, other self-conceptions may be more tentative and and changeable depending on the prevailing circumstances of the individual.

Markova (1987) points out that although both Piaget, and Markus conceptualize structure and process together, the problem remains. In both approaches the interaction between the biological and social is missing. In Piaget's case the structuring process proceeds within the structure itself; transformation of structure is based on what is contained in the structure already. In Markus's model, the information for restructuring comes from the individual's social experience and is processed in the system of self-schemata. Moreover, in both models the agency is missing. The self as an agent would not only process information interacting with its environment, but it would also reflect on and evaluate its actions.

Making a distinction between the 'I' and 'Me', process and structure, James (1890) thought it would be difficult to explore the 'I' empirically, and suggested leaving it out of the realm of psychology. Both Wylie (1979) and Damon and Hart (1982) have

pointed out that the majority of studies exploring the self have been concerned with the "Me" aspect, although theoretically they subscribe to both process and structure.

Gergen (1971) maintains that the two approaches

"need not be seen as mutually exclusive, but rather complementary ways of approaching the same subject matter" (p.18 - 19).

2.4.4 The Self as One versus Many:

Many theorists have conceived of the self as a unitary structure representing the core of personality. James (1890) distinguished among three aspects of the self as object - the material, the social and the spiritual -, but nevertheless he considered those aspects not as different selves but aspects of a single conception of oneself. A similar unitary concept is apparent in the work of Snygg and Combs (1949) who considered the self to consist of those characteristics of a person that were stable rather than changeable. Perhaps the most thorough description of the unitary self comes from Allport (1955), who defined the proprium as those aspects of personality that the individual regards as central to his personality. For Allport, all these facets are woven into a single unified sense of self.

Other psychologists argued that we seem to have many selves rather than a single, unitary self-concept. James (1890) himself, of course, argued for a multiplicity of social selves. Cooley (1902) by positing the 'looking-glass self', implied that each person possesses as many selves as there are significant others in his environment. A similar notion was suggested by Mead (1934), who argued that a person has as many selves as there are social roles.

A thorough analysis of multiple self-concepts, has been provided by Sardin (1962), who argued that the individual possesses a number of 'empirical selves' corresponding to the different social roles that he has to play. He went on to connect this fragmentary view of the self by postulating a 'pure ego' as a cross section of these different empirical selves.

Paralleling the self concept theories, research initially has emphasized the general or total self concept, paying only minor attention to the specific facets of the construct. Empirical support for the multidimensionality of self-concept prior to the 1980s was scarce (Coopersmith, 1967; Marx and Winne, 1978). Coopersmith (1967) is one of the proponents of the global nature of self concept. Although he considered the possibility that one's self system might vary across different areas of experience and discriminated between four such domains (school, family, peer and general references to the self), in analyzing his data, from a sample of 56 ten to twelve year old children, he did not find evidence of differentiation between these four areas. He concluded that :

"Either preadolescent children make little distinction about their worthiness in different areas of experience or, if such distinctions are made, they are within the context of the overall, general appraisal of worthiness that the children have already made."

More recently, Marx, Taylor and Winne (1977) used multi-method multi-trait analysis to examine the relations among subscales from three commonly used instruments (The Piers-Harris Scale, the Sears Self Concept Inventory, and the Gordon "How I see myself scale"). They also found little support for the distinctiveness of the different areas of self-concept and concluded that

"self-concept seems more of a unitary concept than one broken into distinct subparts or facets."

This group of theorists emphasized the role of one's global sense of self-concept and argued that self-concept is so heavily dominated by a general factor that distinct areas of it, cannot be differentiated. This single-score approach, however, has been challenged by those who believe that such a model may mask important distinctions that children make across the different domains in their lives and has been contradicted by more recent research which has shown clear support for the dimensionality of self-concept (Bryne and Shavelson, 1986; Harter, 1982; Marsh, Barnes, Cairns and Tidman, 1984; Marsh, Barnes and Hocevar, 1985; Marsh and Shavelson, 1985; Soares and Soares, 1982).

In an extensive review of construct validation research Bryne (1984) concluded that self concept is "*a multidimensional construct having one general construct and several specific facets.*" (p. 427).

The difference between the two approaches is partly attributable to changes in the design of self-concept instruments and partly to the theoretical models upon which the test construction is based (Marsh, Smith and Barnes, 1984; Harter, 1983).

2.4.5 Consistency versus Inconsistency:

The assumption of multiple self-concepts raises the question of whether these remain consistent over time. Self-consistency theorists argue that individuals have a tendency to create and maintain a consistent cognitive state with respect to the evaluations of themselves. Swan (1987) argues that individuals show a strong tendency for self-consistency. He states that

"People are likely to think and behave in ways that promote the survival of their self-conceptions, regardless of whether the self-conceptions happen to be positive or negative" (p.1039)

The literature on dissonance theory (Festinger, 1957) also argues that inconsistent cognitions or thoughts are intolerable for human beings. However, it seems, that discrepancies between different self conceptions need not necessarily give rise to stress since they may be the result of realistic appraisals in different contexts. Whether or not inconsistency occurs would depend on the individual's awareness of the inconsistency. A second factor affecting tolerance for inconsistency is related to the functional value of the concepts involved. If the self-conceptions involved are central and important for the individual, considerable dissonance might be expected.

In contrast to this, the literature on self-enhancement posits that individuals have a positivistic bias in evaluating evidence relevant to self-performance. This line of theorizing argues that in the absence of a direct challenge or threat to the self, people are generally self-enhancing, that is, they prefer to seek out positive information about

themselves; they may structure their activities to enhance the probability that they will receive positive feedback; and when the feedback is negative, they will selectively interpret information in such a way as to minimize the threat to their positive self-conceptions (Markus and Wurf, 1987). Evidence on ability attributions, and downward social comparison suggests that people prefer self-enhancement (Greenwald, 1980; Taylor and Brown, 1988).

There is as yet little resolution of the self-enhancement versus self-consistency controversy. The results of numerous studies have been equivocal, and various interpretations of the apparent conflict have been offered. Currently, most researchers view the two motives (self-consistency and self-enhancement) as quite interdependent (Epstein, 1973; Rosenberg, 1979). The person is seen as seeking to develop or maintain a positive affective state (self-enhancement). Simultaneously, he may seek to maintain a sense of coherence and continuity, thus, fulfilling a self-consistency motive.

2.5 Understanding the Construct:

As it became evident from the review of the theories on the nature of the self-concept, after decades of theory and research, theorists are far from agreeing on what it is and what it includes. A host of self-referent terms have been used, such as 'ego', 'identity', 'proprium', 'self-acceptance', 'self-actualisation', 'self-concept', and 'self-esteem'. These terms have been employed interchangeably and synonymously by some writers. Wylie (1961) points out that:

"The terms are so intertwined and overlapping in the literature that the constructs must be discussed as a group."

Although 'self' and 'self concept' are not always clearly differentiated, it seems that for many writers, 'self' is considered a superordinate construct. The term 'self' is used to refer to the 'inner nature' or 'essential nature' of man (Fromm, 1947; Maslow, 1954); to the individual as known to the individual (Rogers, 1951); to a constellation of attitudes having reference to 'I', 'Me' or 'Mine' experiences (James, 1890); to individual

identity (Erikson, 1968). There are also various other distinctions in the literature. Snygg and Combs (1949) speak of 'phenomenal' and 'non-phenomenal' selves; Allport (1955) of the 'proprium', and Sullivan (1953) of the 'self-system'.

Purkey (1970) offers a definition which serves to highlight three important aspects of the self. That the self has a strong evaluation component; second, that it is a dynamic system; and third, that it reveals a degree of organisation. He says that the self:

"... is a complex and dynamic system of beliefs which an individual holds true about himself, each belief with a corresponding value" (p. 7).

Self concept, on the other hand, is defined by many writers as a cluster of ideas and attributes that we have about ourselves and it is treated as an object (Burns, 1982, 1986; Hamachek, 1985, 1987; Epstein, 1973; Rosenberg 1979, 1986; Shavelson et al. 1976). Rosenberg (1986, p.7) states that the self-concept is

"the totality of the individual's thoughts and feelings having reference to himself as object".

Similarly, Hamachek (1986) states that self-concept is *"...a collection of beliefs about the kind of person we are"* (p.12).

These writers seem to emphasize that the self concept is only one aspect of the global self, the 'Me' aspect, a product of self-objectification.

Another point of confusion seems to rise in the use of the terms self-concept and self-esteem. Some writers embrace self-esteem within their definition of self-concept (Burns, 1986; Shavelson et al. 1976); others make a clear distinction between the two concepts (Hamachek, 1985; Harter, 1983; Markus and Nurius, 1984; Rosenberg, 1979, 1986).

Burns (1986) defines self-concept as

"the individual's percepts, concepts and evaluations about himself, including the image he feels others have of him, and the person he would like to be, nourished from a diet of personally evaluated environmental experience". (p.52)

In the same line, Shavelson et al. (1976) consider evaluation as one of the characteristics of self-concept.

"Not only does the individual develop a description of himself in a particular situation or class of situations, he also forms evaluations of himself in these situations. Evaluations can be made against absolute standards, such as the 'ideal', and they can be made against relative standards such as 'peers' or perceived evaluation of 'significant others'"(p.414).

Hamachek (1985) suggests that they are interrelated terms, pointing that self-concept is an indicator of what people think about themselves, while self-esteem is a barometer of how people feel about themselves (the affective component of the self).

In his treatment of self-esteem, Coopersmith (1967) refers to it as

"The evaluation that the individual makes and maintains with regard to himself; it expresses an attitude of approval or disapproval, and indicates the extent to which the individual believes himself to be capable, significant, successful and worthy". (p.4)

Rosenberg (1965) defines self-esteem in a similar way as a

"positive or negative attitude towards a particular object, namely, the self" (p.30).

Self-esteem, then, seems to refer to the making of a conscious judgement regarding the significance or importance of oneself. As was made clear by Jame's classic definition, an assessment of one's successes is not sufficient to determine self-esteem levels. It needs to be further elaborated by reference to one's pretensions before a level of self-esteem is generated.

Calhoun and Morse (1977) suggest that self-concept is developed earlier than self-esteem and also that self-concept is a more stable and constant phenomenon, while self-esteem may more readily fluctuate from time to time. Coopersmith (1959) also contends that *"self-esteem is an ephemeral subject difficult to deal with empirically"*.

It seems that self concept is conceptualised by most writers not as a simple, unitary phenomenon, but as a dynamic complex structure (Epstein, 1973; Greenwald, 1980; Mead, 1934; Rosenberg, 1979) which is thought to include the following aspects:

- a) a belief or cognitive component;
- b) an affective or emotional component;
- c) an evaluation; and
- d) a predisposition to respond (Burns, 1982, 1986).

A dramatic change of the recent research in self-concept theorizing was the abandonment of the view of the self-concept as a stable, generalized, or average view of the self in favour of the notion that self-concept is a multidimensional, multifaceted phenomenon. Although researchers define self-concept differently in terms of hierarchies, prototypes, networks and schemas, they generally seem to agree that it is an active structure. Not all aspects comprising the self-concept are considered alike. Some self-conceptions are considered core conceptions while others are more peripheral (Gergen, 1971). Central cognitions of the self are generally thought to be the most well elaborated ones and are presumed to affect information processing and behaviour most powerfully.

One more distinction which is made in the literature is that between self-esteem and self-worth. Burns (1986) considers self-worth as a more fundamental concept, involving a view of oneself as being master of one's actions. He argues that while self-esteem involves comparing what we have done or what we are like with some standard, self-worth is more concerned with the fundamental view that one has a basic level of ability or competence.

Brisset (1972) makes a similar distinction by differentiating between the process of self evaluation, and the process of self worth. He considers each one of them as complementary to the other and he argues that self worth (the feeling that the "self" is important and effective) is more fundamental to the individual than self evaluation (the making of a conscious judgement regarding the importance and significance of oneself).

In this study, the position of those theorists who define self-concept as a person's perceptions and evaluative judgements of himself is adopted. Self-concept is considered a multidimensional construct containing domain-specific judgements as well as a global judgement about the value of oneself. It is critical to appreciate that global self-esteem is thought to refer to an overall judgement of oneself as a person, which is not assessed by combining domain-specific judgements.

2.6 Recent Theoretical Models of Self-Concept:

In her review Bryne (1984) has identified four theoretical models of self-concept: the nomothetic, the hierarchic, the taxonomic and the compensatory. These will be briefly presented below with more attention paid to the hierarchical model which seems to be the one more supported by recent research.

2.6.1 The Nomothetic Model:

The first perspective on self-concept is the nomothetic position which argues that self-concept is a unidimensional concept best assessed by combining an individual's self-evaluations across items tapping a wide range of content (Coopersmith, 1967). Items are given equal weight, and it is assumed that the total score adequately reflects the individual's sense of self across the various areas of his life. This approach has been challenged by those who argue that such a view masks important evaluative distinctions that individuals make about their competence in different domains of their lives.

Another position is adopted by Rosenberg (1965, 1979) who also advocates that self-concept is a unidimensional construct but he strongly emphasizes the need to retain both the notion of global self-esteem and focus on the constituent parts of this whole. He argues that the two are not identical.

"Both exist within the individual's phenomenal field as separate and distinguishable entities, and each can and should be studied in its own right" (1986, p.20).

Rosenberg has acknowledged that a global judgement of self is likely to be the product of a complex combination of the more domain-specific judgements. He has chosen, however, not to examine these underlying judgements, assuming that the individual is probably unaware of the processes through which these elements are combined. Rather he concluded that a global self-evaluation of one's self-esteem is a phenomenological reality for adults and can be assessed directly. He further cautions that we cannot understand self-concept without considering the relationships between the elements, and their location in the self concept structure.

2.6.2 The Taxonomic Model:

Another approach states that self-concept is structured like a series of several highly specific factors (Winne, Marx and Taylor, 1977). This has been termed the taxonomic model and is analogous to Spearman's and Thurstone's theories of intelligence. This model posits that the facets of self-concept may be relatively independent of each other.

2.6.3 The Compensatory Model:

A third approach has been proposed by Winne and Marx (1981), the compensatory model. This also supports a general facet of self-concept but also states that the specific facets are inversely related. Lower status on one specific status of self-concept might be compensated by higher status on another specific facet.

2.6.4 The Hierarchical Model:

A fourth approach can be found among those who propose hierarchical models of the self which parallel Vernon's model of intelligence. In these models, a construct such as self-concept or self-esteem represents a superordinate category at the top of the hierarchy with increasingly differentiated and specialised elements emerging at the lower levels. Such models have been proposed by Shavelson, Hubner and Stanton (1976), Epstein (1973), and L'Ecuyer (1981).

Shavelson et al. (1976) proposed a general self-concept at the apex of the hierarchy, defined by academic and non-academic areas. Academic self-concept is subdivided into a range of specific school subjects, while non-academic self-concept is subdivided into physical, social and emotional self-concepts. These domains undergo further subdivisions at lower levels of analysis.

The model proposed by L'Ecuyer (1981) provides an even more differentiated picture of the components of self-concept. He identifies a number of self structures, such as the material self, the personal self, the adaptive self and the social self. Each of these is

further subdivided into a number of categories at the base of the hierarchy. Self esteem, in this model is considered a substructure under the adaptive self and is further divided into feelings of competence and self worth. It is argued that general self-concept is the most stable facet while there exists decreasing stability lower in the hierarchy.

Epstein (1973) also suggests that under self-esteem which represents the superordinate construct, there are second-order postulates relating to general competence, moral self-approval, power, love and worthiness. These again are subdivided into lowest order postulates. Epstein states that as one moves from lower to higher order postulates, the postulates become increasingly important to the maintenance of the individual's self theory.

Harter (1983) argues that although these hierarchical models have advanced our understanding of the organisation of the structure of the self-concept, upon closer examination they seem to present problems. It is not clear how the lower level postulates relate to the general factor at the apex, or why the general factor is considered a superordinate factor. Such models are also problematic because certain domains may be more important to one's overall sense of self worth than others; yet, domains are not differentially weighted in terms of their importance to the self. In these models, the general self-concept is inferred from some combination of self evaluations at the second or third level.

Rosenberg(1986) provides an excellent analysis of why one cannot simply assess an individual's attitude towards his specific characteristics and then add up these responses in order to arrive at a global self-esteem score.

"The critical drawback to this procedure is that it overlooks the extent to which the self-concept is a structure whose elements are arranged in a complex hierarchical order. Hence simply to add up parts in order to assess the whole is to ignore the fact that the global attitude is the product of an enormously complex synthesis of elements which goes on in the individual's phenomenal field. It is not simply the elements per se but their relationship, weighting, and combination that is responsible for the final outcome" (p.21).

It is argued, therefore, that each of the elements at each level, would have its own associated value and valence. That is, some elements would be positively evaluated and others negatively, while at the same time these positive and negative components would be considered to be of greater or lesser importance. For example, an individual may consider his negative self-concept as a maths student to be unimportant but his positive self-concept as an artist to be of special significance, while another might be greatly concerned by his low self-concept as a mathematician but uninterested in his belief that he lacks artistic talent. A negative component would have a great influence on a superordinate one if it had a high valence, while several positively valued components would have a relatively slight effect if each one had only a low valence.

Harter (1983) proposed a model representing a combination of several approaches. According to this both the multidimensional nature of domain specific judgements, as well as one's sense of global self-worth should be considered. The self is depicted as a profile of evaluative judgements across different domains and global self-worth is assessed not by combining the specific judgements but by asking an independent set of questions that tap the construct of self-worth directly. She also considers essential to assess the importance of success in each domain by calculating a discrepancy score (competence minus importance). She further argues that certain domains systematically contribute more to self-worth than others.

2.6.5 Conclusions:

Recent reviews (Bryne, 1984) conclude that the factor analytic studies, together with the Multi-Trait Multi-Method (MTMM) and causal modeling studies, demonstrate clearly that self-concept is a multidimensional construct. Although no one model has been sufficiently supported empirically, the studies of Marsh and his colleagues (Marsh, Craven and Debus, 1991; Marsh, Parker and Barnes, 1985; Marsh, Smith and Barnes, 1983) are providing strong support for the hierarchical model.

Also the studies of Harter and her colleagues (Harter, 1982, 1985; Harter and Connell, 1982) provide support for several domain specific self-concepts and a general aspect of self, thus, substantiating other findings pointing out that self-concept is a multidimensional construct.

2.7 Origin and Development of Self-Concept:

In her major review on the developmental perspectives on self-esteem, Harter (1983) contends that for the most part self-esteem has not yet been addressed developmentally. There is little empirical evidence pertaining to how the self is constructed and how it changes its content and structure. The generally held view in the developmental literature is that the concept of self has its roots in the young child's abilities to recognize himself. This rudimentary self-concept then is progressively differentiated and elaborated throughout development, moving from concrete to abstract. Three main approaches can be distinguished in the literature, attempting to account for the development of self-concept: the psychoanalytic, the biological and the social-cognitive approaches.

2.7.1 The Psychoanalytic Approach:

Psychoanalytically oriented theorists examined the differentiation of self from the other and the infant's emerging awareness of self as an autonomous agent. It was Freud (1950) who initially discussed the general process by which the infant must come to recognize that the self is separate from mother.

The work of Mahler (Mahler et al., 1975) was the most comprehensive on this issue. Mahler has described the development of self and self-awareness as a process of separation and individuation over three main phases and several subphases. Although her writings were criticized on a number of empirical and conceptual grounds, her model provided a graphic description of the challenges and achievements of early self-

knowledge. Harter (1983) points out that the emphasis put by Mahler on mother as an emotional object in the infant's life, offers little sense of the infant's own contribution to the interaction.

2.7.2 The Biological Approach:

This view was put forward by Kagan (1981) who has attributed the initial emergence of self-awareness to inborn biological mechanisms that mature late in infancy. Basic to his position is the postulate that self-knowledge naturally arises in the child as a result of neurological maturation and its consequent impact on psychological functioning. His view strongly de-emphasizes the importance of the social environment in the development of self-understanding. However, this approach has not had much empirical support (Damon and Hart, 1988).

A related school of thought advocating a more or less consistent pattern of behaviour on the basis of inherited characteristics is put forward by theorists who stress the importance of a small number of processes, stages or structures internal to the individual as important in the causation of personality.

Thomas and Chess (1977) saw the personality traits as closely related to temperament which they define as general features of personality that have their origin in biology and are present to some degree at birth or soon after. Temperament theorists argue that it is the temperament type to which an individual belongs which is of primary importance. It is from these basic types that secondary characteristics (traits and specific behaviours) follow more or less inevitably. It follows from this position that an individual's development, in whatever kind of social and physical environment, will inevitably lead to certain kinds of behaviours.

However, temperament's early appearance and biological foundation does not necessarily imply stability. Clearly constitution at birth would predispose the infant to go towards one direction rather than another. Moreover, these individual differences among newly born infants would influence their social interactions and would have important implications in infancy and later childhood. However, the way that a

disposition is perceived would affect the meaning of the disposition and consequently the behavioural significance of it for a particular child cannot be predicted. Moreover, the dramatic cognitive, social and emotional changes brought about during the transition from infancy to early childhood may affect the behavioural expression of the inherited dispositions.

Thomas and Chess (1977) are careful to write that temperament is a 'phenomenological construct'. Although they emphasize its biological grounding, they also acknowledge that it is formed by multiple influences including social ones which operate early in life. Aside from temperament, the infant's unique physical endowment is another aspect of his individuality with marked consequences for his social interactions and his level of self-concept. Variations for example in size and shape may influence early interactions of infants with their caretakers. Children born with physical disabilities are particularly likely to experience unusual social interactions which may influence their abilities to establish relations with others later in life. Such physical deformities are also likely to have a marked effect on children's self-esteem levels given that physical notions are critical defining features of self during the early childhood years.

2.7.3 The Social-Cognitive Approach:

Although the literature on self-concept was dominated by an emphasis upon reference groups and significant others as the 'mirrors' that reflect images of the self, and a considerable body of research supports this proposition (Gecas and Schwalbe, 1983), it seems that this idea is only part of the picture. Equally important is the child's interpretation of the messages conveyed to him by significant others. Several recent social-cognitive approaches emphasize the active part played by the child in the socialization process. This recent emphasis on the child represents a convergence of several lines of thought. First, there is an increasing application of cognitive-developmental principles to social-personality development. This approach, emphasizes the active, constructive processes during development, such as how the child constructs a theory of self (Harter, 1983; Lewis and Brooks-Gunn, 1979).

Second, is the recognition of the reciprocity of influence among participants in social interaction (Maccoby and Martin, 1983). Third, the idea that the motivation to act in accordance with social conventions may be internally based, on competence or mastery motivation (Bandura, 1981).

Harter (1983) and Damon and Hart (1982, 1988) provided the most comprehensive theoretical models explaining the development of self-concept. Both models combine a focus on both content and structure.

Harter's (1983) model of developmental change posits a tendency for self-descriptions to become increasingly abstract, incorporating first behaviours (e.g. 'good at reading'), then traits (e.g. 'clever'), then single abstractions ('scientific'), and then higher order abstractions ('intellectual'). Within each stage, there is an alternating sequence of first overgeneralizing self-conceptions and then differentiating and reintegrating them (e.g. first the child thinks of himself as 'all clever' and then 'clever in Maths').

She argues that self-concept progresses through four stages roughly paralleling Piagetian stages. She based her model on Selman's (1980) theory of interpersonal relations and Fisher's (1980) cognitive developmental theory. She argues that children move from observable physical and behavioural dimensions to more psychological constructs; from specific attitudes to higher-order abstractions; and from global and overgeneralized descriptions to more differentiated and situation-specific ones, while at higher levels, this differentiation is combined with a reintegration of the different components. Consistent with her proposal that self-concept becomes increasingly integrated with age, Harter argued that a global sense of self-worth does not evolve and specific facets of self-concept are not well differentiated before 8 years of age.

Empirical research has lend support to this notion (Harter, 1986; Harter and Pike, 1984; Stipek and MacIver, 1989), although subsequent research (Silon and Harter, 1985) suggested that mental age may be more important than chronological age. In contrast, Marsh Craven and Debus (1991) found that first and second grade children possessed a well defined general self-concept, as measured by the General Self scale of SDQ-1, and also that they were better able to differentiate among multiple dimensions

of self-concept than previously assured. The researchers argue that the different procedures used in their study (individual administration versus group administration used in the previous studies) and the different method of analysis (confirmatory versus exploratory factor analysis) may account for the discrepant findings.

In agreement with Harter, Damon and Hart (1988) also present a sequence of self-understanding moving generally from physicalistic to psychological self-perceptions, and towards a conceptual integration of diverse aspects of self into a unified system. However their developmental model presents a more complex and multidimensional pattern of development, in that it contains not only facets of the self-as-object dimension, but subdimensions of the self-as-subject as well.

They subdivide the self-as-object facet into four basic schemes, the physical, active, social and psychological. The "I" is subdivided into three subjective processes of awareness: the sense of continuity, the sense of distinctness, and the sense of agency. They argue that the move from physical to psychological cannot be taken as the criterial index of a genuine developmental shift, given that empirical evidence shows that early self-understanding extends far beyond an awareness of physical qualities. Moreover, advanced self-understanding continues to draw heavily on external categories. Their model suggests that each of the physical, active, social and psychological modes of construing the self undergoes developmental change throughout the entire period from early childhood to adolescence (Damon and Hart, 1988).

They stress that the self-as-object schemes is hierarchical in nature and although age-related trends might exist, this does not imply a developmental reorganisation in which one mode of understanding becomes transformed into another; rather, earlier forms of self-understanding are incorporated into later forms in a somewhat new form. They further argue that although the developmental progression is logical and hierarchical, it is by no means inevitable; it is heavily dependent on the social-contextual conditions of the individual person.

The growth of self-concept, then, is generally seen as determined by both the information that the person receives about himself (through self-perceptions, social

comparison and reflected appraisals) and by his ability to cognitively process self-conceptions.

2.7.4 Conclusions:

There seems to be general agreement among the different theorists that qualitative changes in the child's thinking capacity determine the development of his self-concept.

Three points have been singled as particularly important developmental cornerstones:

a) The ability of the child to distinguish himself from others. Bannister and Agnew (1977) stress this distinction between self and not self by stating that

"The ways in which we elaborate our construing of self must be essentially those ways in which we elaborate our construing of others, for we have not a concept of self but a bipolar construct of self-not self or self -others" (p. 99).

b) A development of categorical identification. Although this process starts early in life, the categories are not logically ordered or hierarchically arranged till middle childhood. It is during these years that an integration of existing categorical identifications becomes possible, and progressively the capacity for self-awareness develops, in that the specific categories adopted reflect the appraisals of significant others (Harter, 1983). Lewis and Brooks-Gunn (1979) emphasized how knowledge of others is related to the development of categorical self. They claim that the knowledge that the developing child possesses about self versus other is a consequence of social interaction.

c) The development of perspective taking skills. It has been argued that the internalization of the evaluative judgements of others in one's social environment is dependent on the emergence of cognitive developmental skills in the form of perspective taking. This ability helps the child to imagine what other people are thinking of him. Therefore, he begins to construct the image of the "generalized other" (Mead, 1934). As Rosenberg (1979) notes of the young child

"Not yet viewing himself from the perspective of others, the child has only a rudimentary propensity to view himself from the perspective of the "Me", to see himself as an object" (p. 254).

In addition to changes in the child's cognitive capacities, influences from the social environment are considered equally important. These include the 'reflected appraisals' from significant others and the information gathered through social comparison processes. Several studies emphasized the influence of the child's immediate frame of reference in forming his academic self-concept. Marsh (1987b, 1991; Marsh and Parker, 1984) adapting the frog-pond metaphor described the big-fish-little-pond-effect (BFLPE) whereby equally able students have lower academic self-concepts in higher-ability schools than in lower ability schools. Thus finding oneself in a higher ability reference group may affect self-concept negatively.

Empirical evidence shows that especially during middle childhood years social comparison processes become particularly important in the formation of academic self-concept, and the general climate and teaching practices of most classrooms favour this process (Marsh, 1987; Marsh and Parker, 1984; Rosenberg, 1986).

It was considered necessary to further elaborate the development of self-concept during middle childhood years, as this is the age range from which the sample of this study was drawn. Moreover, the emergence of academic self-concept which represents a key construct in the present research is traced during this period. In the next section, therefore, the theoretical work on middle childhood years is discussed.

2.8 Self-Concept Development During Middle Childhood Years:

The development of self-perceptions of competence are considered of primary importance by many different theorists (Bandura, 1982, Covington and Beery, 1976. Weiner, 1986), as these are assumed to affect behaviour and subsequent learning and thus to have practical, educational importance. Although the middle childhood years are especially important for the development of academic self-concept which is closely related to the experience of schooling, research specifically referring to middle childhood is limited and atheoretical (Markus and Nurius, 1984).

The actual processes involved as young children go about constructing an academic self-concept are not very clear, and there is little evidence on how children's social milieu and demographic characteristics, or other structural factors, impinge on the development of self. It has been generally suggested that in middle childhood, children develop a sense of their competence and an initial sense of themselves as valued members of society.

It is argued that during middle childhood some of the most powerful and enduring self-perceptions are shaped (Markus, 1980), and that these self-perceptions are dependent on one's experiences in primary school. These are perceptions of academic ability, of popularity with peers, and of athletic ability. Moreover, a variety of studies indicate that a child's general feeling of self-worth is intimately linked to his academic experiences during this period and that his efforts in other nonacademic areas may not compensate for the negative feelings that accompany failure at school (Epps and Smith, 1984).

Erikson (1959) is one of the theorists who stressed the importance of middle childhood years for the child's self-definition as a learner. He saw this age as best characterized by the child's successes and failures at school. He stated that the child's increasing interest in learning culminates in a personal 'sense of industry', which is considered a basic sense of competence or a sense of inferiority. Children develop views of themselves as industrious or productive or as inferior or inadequate, depending on their academic experiences. He further argued that even the adult's global feelings of self confidence can often be traced to particular events and experiences of this period (Erikson, 1959).

Therefore, developmental changes and widespread changes in the educational environment make the primary school years a potentially 'sensitive period' for conceptions of academic competence. The bulk of research up to now has focused on developmental changes in cognitive processing abilities, although there have been several recent attempts to investigate the role of environmental factors, such as classroom structure, grading practices and the structure of the task (MacIver, 1987; Rosenholtz and Simpson, 1984a, 1984b; Stipek and MacIver, 1989).

Markus and Nurius (1984) specify four features which mark this period as particularly significant in shaping the child's self-concept:

- a) The fact that children between 6 and 12 become able to take the perspective of the other,
- b) The child's ability to hierarchically classify and logically organize the concrete events, objects and people in his environment;
- c) The need to come to terms with the social environment, created by an extensive contact with it; and
- d) The acquisition of new intellectual, social and athletic skills which provide new domains for self-definition.

Empirical research has shown that accuracy of judgement increases with age (Benenson and Dweck, 1986). Children before the age of 7 or 8 tend to overrate their competence (Benenson and Dweck, 1986; Nicholls, 1978, 1979). Self-perception positive bias among young children has been conceptualized as being the result of cognitive immaturity by some theorists (e.g. Nicholls, 1978, 1979). Two developmental changes are particularly important in influencing children's self perceptions. First, there appear important developmental changes in the way in which children conceptualize intellectual ability. Young children have a very global concept of ability that includes social behaviour, work habits, and conduct. Research using Marsh's Self-Description Questionnaire (SDQ) found that self-ratings of competence in maths and reading, physical ability and relations with peers were more differentiated in fourth and fifth than in second grade (Marsh et al., 1984). This notion of the young child's poorly differentiated concept of ability is consistent with the views of theorists who claim that development proceeds from a state of relative globality to a state of progressive differentiation and hierarchic integration (Harter, 1983). However, this state of affairs may well be an artifact of the verbal assessment methods that have been used to examine ability conceptions.

In addition young children do not have a concept of ability as a stable trait that limits the effectiveness of effort. Dweck (1986; Dweck and Bempechat, 1983) refers to young

children's undifferentiated concept of ability as an 'instrumental-incremental' concept. He argues that young children view ability like a skill which is increased through one's own instrumental behaviour, like practice and effort. A differentiated concept of ability, to which Dweck refers to as an 'entity' concept, emerges later on, as is thought to require a higher level of cognitive development. To recognize ability as a stable trait, children must be able to recognize consistency and behaviour over time and across situations and to attribute the consistency to the person.

In addition the concept of ability as a stable trait requires an understanding of the reciprocal relation between effort and ability -that ability limits the effectiveness of effort, and that effort is more facilitative of performance in high-ability rather than low-ability individuals-. Nicholls (1978) suggests that this mature understanding of ability requires the formal operational capacity to coordinate proportional relations. He found that children aged 5 or 6 do not distinguish between effort, ability and outcome. Only children from about the age of 7 to 10 distinguish effort and outcome as a cause and effect, but ability in the sense of capacity which can increase or limit the effectiveness of effort is still not understood until early adolescence.

Support for these views comes from several studies which found that younger (6 - 7 years) children's predictions about performance and ratings of ability show relatively little effect of prior performance feedback especially failure (Clifford, 1978; Parsons and Ruble, 1977). In contrast older primary school children see failure as being a proof of a lack of ability. Younger children do not conceptualize themselves apparently in terms of underlying dispositional characteristics that generalize across situations.

There is some evidence that children have difficulty acknowledging 'contradictory' assessments (for example, being good at maths but bad at reading), probably because preoperational thought precludes them from coordinating different perceptual attributes simultaneously. In this case, it would not be possible to use across-domain comparisons to assess competence.

The second important developmental change concerns the use of social comparative standards in performance evaluation. Although young children can compare socially,

social comparison does not seem to be natural or of high priority in their self-evaluations of ability until about 7 - 9 years of age (Aboud, 1985; Boggiano and Ruble, 1979; Nicholls, 1978).

Research is inconsistent with regard to the exact age at which children use social comparison to judge their ability. There is clear evidence of a sharp increase in children's use of social comparison in about the second or third grade (Aboud, 1985). Furthermore, there is evidence that older children are more skilled than younger children in obtaining and interpreting social comparative information (Aboud, 1985; Ruble, 1983). In addition, as children develop, their social comparison choices become more differentiated.

Cognitive developmental changes although important in influencing the formation of a self-concept of ability are only one part of the story. A full discussion of the changes in the way children evaluate their academic ability must include environmental influences and the consideration of a child-by-environment interaction.

A number of theorists (e.g. Benenson and Dweck, 1986) have suggested that socio-experiential factors may be responsible for the perceived inaccuracy of young children's self-perceptions. Children from preschool until about the second grade seem to base their ability judgements on social reinforcement and on mastery. Given the uniformly high levels of positive performance feedback that most young children are likely to receive and teachers' emphasis on individual accomplishments, it is not surprising that they have high perceptions of intellectual competence (Stipek and MacIver, 1989). Teacher praise during the first few years in school seems particularly influential for children's competence judgements, even if such praise is contradicted by other evidence, such as objective-task outcomes. In contrast to older children in the middle and upper primary grades who consider praise in conjunction with other information, young children accept praise at face value, and its importance does not seem to diminish by the fact that the task was easy or that all children were praised (Stipek and MacIver, 1989).

In addition to teachers' contributions on children's ability perceptions, recent work has directed attention beyond the immediate school setting to the role that parents play in shaping their children's developing sense of competence. Preliminary findings consistently revealed that parents develop beliefs about their children which may diverge from evidence of the child's actual abilities, and these beliefs exert a strong and perhaps causal influence on the child's ability self-perceptions and their achievement attitudes and behaviours (Eccles, 1983; Phillips, 1984, 1987).

Moreover, many classroom conditions seem to affect children's ability conceptions. Dweck and Leggett (1988) have found systematic differences among upper primary children in the degree to which they hold an 'entity' versus 'incremental' theory of ability. These individual differences are most likely related to the degree of variability in tasks, the stability of ability groups, and the salience of social comparative information. Rosenholtz and Simpson (1984b) argue that an entity concept of ability is itself a social construction perpetuated by a particular kind of educational context. The researchers maintain that unidimensional classes (classes where the same materials are used, children receive instruction as a whole or in definite ability groups, and they have little choice over tasks) in contrast to multidimensional classes (which allow children to work on their own and make independent choices about their work) foster the development of an 'entity' theory of ability due to an increased use of social comparative standards. This increased salience of social comparison is due to the tendency of undifferentiated task structures to reduce intraindividual variation in performance across time while making inequalities in performance across students more interpretable, as outcomes are more comparable, more salient and more public (MacIver, 1987).

On the other hand, classrooms with differentiated tasks from which children can choose seem to reduce the amount of the interpretability of academic performance information shared among children (Rosenholtz and Simpson, 1984a, 1984b). However, the frequent or infrequent use of grades and the emphasis put on them also seems to interact with classroom and task structure in influencing the kind of information used to

form ability conceptions. If grades are assigned frequently, then children might use them to define their performance; the absence or infrequent use of grades in differentiated, multitask environments, make it difficult for children to judge how their teachers rate their performance; they may, therefore, rely on their own autonomous interpretations of academic performance (MacIver, 1987).

It is apparent, therefore, that a multiplicity of factors, both developmental and environmental, influence the formation of the academic self-concept and indirectly global self-esteem during middle childhood years.

2.9 The Measurement of Self-Concept.

Particularly extensive discussions of methodological issues involved in self-concept measurement can be found in Shavelson et al. (1976), Wells and Marwell (1976), and Wylie (1974). A brief discussion of some of these problems and particularly the problems associated with self-report techniques, is presented in the methodology section of this study. Here the problem associated with the measurement of general self-concept will be briefly mentioned.

It appears that as the specific facets of self-concept became more important, the role of general self concept became less clear. And although investigators had considerable success in measuring the second-order dimensions, the assessment of the general self-concept has proved particularly difficult. This is in partly due to the different definitions of the general self-concept used in the literature. Marsh (1986a) states that at least five operational definitions have been used by different theorists.

- a) A conglomerate general self concept that is the total score from a diversity of self referent items that attempt to sample a broad range of characteristics (e.g. Coopersmith's Self Esteem Inventory).
- b) A discrepancy general self in which ratings of specific facets of self are subtracted from ideal ratings (Higgins, Klein and Strauman, 1985).

- c) A weighted average general self, where specific facets are weighted according to their salience, value or importance (Hoge and Mc Carth, 1984).
- d) A global self-esteem scale that is relatively unidimensional and content free and it is composed of items that infer a general sense of self worth (Harter, 1982; Rosenberg, 1965).
- e) A hierarchical self-concept that appears at the apex of hierarchical models (Epstein, 1973; L'Ecuyer, 1981; Shavelson et al. 1976).

The first approach is severely criticised by Wylie (1974) who comments that there is little rational for inferring a general self-concept from responses to items reflecting diverse content.

The discrepancy model assumes that in order to maintain a positive sense of self worth, one must discount the importance of domains in which he is not performing adequately, as well as endorse the importance of domains in which he is competent. Starting with James (1890) many theorists stressed the role that an individual's goals and values play in his general self-concept (Coopersmith, 1967; Harter, 1982, 1983; Pelham and Swan, 1989; Rosenberg, 1979, 1986). It is postulated that if one's demonstrated level of success across domains is equal to one's aspirations for success, then one would experience high self-esteem. Conversely, if one's aspirations vastly exceed one's actual level of success, one would suffer from low self-esteem. Although this argument is intuitively appealing, empirical evidence has yielded mixed results.

Rosenberg (1965) reported the first empirical test of James's proposal. He showed that individuals who possessed negative self-conceptions were more likely to be low in global self-esteem if they considered the negative characteristics personally important. However, subsequent research (Hoge and McCarthy, 1984; Marsh, 1986) failed to replicate Rosenberg's findings.

Harter (1990) proposed instead of weighting each specific facet by its perceived importance to determine the difference between each facet and its perceived importance and calculate an average total discrepancy score across those domains that the individual

considers important. She found support of James's conceptualization but these findings seem suggestive rather than definite.

Wylie (1974) points out that the studies employing a discrepancy score may be introducing a 'possible theoretical confusion' as one's reported ideal may represent a cultural stereotype which is different from a desired self.

In hierarchical models, the relation between general self-concept and the particular facets is unclear. General self-concept is usually assessed by adding up the various subscale scores, a procedure considered inadequate by several theorists. Besides the hierarchy appears so weak that the general self-concept at the apex accounts for only a small portion of the variance in the specific facets (Marsh and Shavelson, 1985).

The scales used to measure global self-concept fall in all the categories listed above. This creates a difficulty in interpreting the results across different studies, as the diverse measures used may well be measuring different things.

2.10 Self-Concept and Education:

Children come to school with their self-concepts already shaped by early experiences. The importance of parents and child-rearing practices has been stressed by many investigators. Specific parental behaviours, interest, concern, limit setting, democratic child-rearing practices (Coopersmith, 1967), and warmth (Sears, 1970) have been found to be significantly related to self-concept. Therefore, children enter school with clear ideas about themselves and their abilities. However, despite the tremendous influence of the primary environment, the school has a great role to play. The cultural value placed on academic achievement makes it an equally important source of influence during the middle childhood years.

When children start school, their academic successes and failures will serve as a basis on which they define themselves as adequate or inadequate. Many theorists argue that such evaluation is so potent and pervasive that influences greatly the general level of self-esteem and consequently the individual's mental health as well. It is argued that it

is the frequency and consistency of adequacy or inadequacy over a period of years which has its major effects on self-concept. A child faced with a sufficient number of unsuccessful experiences, will eventually come to feel incompetent and inferior. And once he identifies himself with failure, his achievement motivation diminishes and the same happens with his expectations for future success. The child finds himself in a vicious circle where diminished motivation and low expectations lead to more failures which in turn strengthen a negative self-concept and result in more depressed expectancies for future success.

The first part of this section examines two theories dealing with the relationship between self-concept and education. In the second part teacher influences on students' self-concept are briefly discussed.

2.10.1 Self-Concept Theories in Education:

Bloom (1976) and Covington and Beery (1976) provided the most comprehensive theoretical models accounting for the relationship between self-concept and academic achievement. Both theories will be discussed briefly below as they are particularly relevant to the formation of academic self-concept.

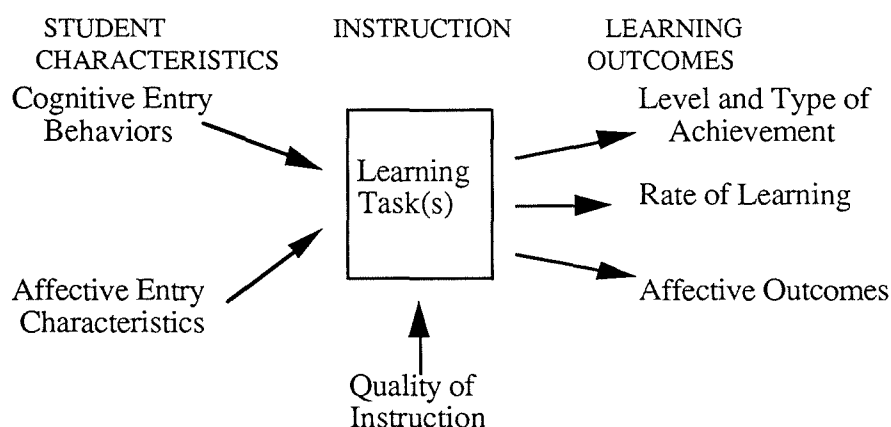
2.10.1.1 Bloom's Theory of Learning:

Bloom's (1974, 1976, 1977) theory deals with student characteristics, quality of instruction and learning outcomes. While recognizing that a great deal of the variation in achievement can be accounted for by individual differences in learners, such as intelligence, he nevertheless stressed the importance of environmental conditions at home and at school, and maintained that all students can learn if provided with appropriate prior and current conditions of learning.

He assumes an interactional relationship between self-concept and academic achievement. His model incorporates two kinds of student characteristics which he

considers important for learning: cognitive entry characteristics and affective entry characteristics. (Figure 2). By 'cognitive entry characteristics', he refers to prior learning which the student should have if he is to master the task. By 'affective entry characteristics' he implies the student's motivation and attitudes to subjects and school in general. 'Affective outcomes' are the learning outcomes corresponding to what other theorists have called academic self-concepts. Here, only the part of his theory referring to affective outcomes will be discussed, as this is directly relevant to this study.

Figure 2
Bloom's Model of Learning.



Bloom elaborated on what he called subject-related affect. He maintained that a student's beliefs about a subject are influenced by his perceptions of his adequacy or inadequacy with such tasks. If his performance has been adequate he will approach the next task with confidence. If his performance has not been adequate over a number of tasks, he will come to believe that he is inadequate in that particular type of learning. He argues that if the process of adequate or inadequate experiences with regard to learning tasks is generalized over a large number of tasks over a long period of time, the student would develop a general sense of adequacy or inadequacy in connection with academic activities. He calls this more general view school-related affect, and he sees it as highly influential for the student's future effort and learning.

In contrast to subject and school-related affect where the object of the affect is outside the individual, in academic self-concept the affect is directed onto the student himself. Bloom (1976, 1977) states that eventually the object of appraisal for the student becomes partially shifted from the school subjects or the school to the self. If the student works in an environment in which self-appraisals and external appraisals judge him as adequate, he develops a general sense of competence; if he is faced by appraisals of inadequacy, he is likely to develop a deep sense of inadequacy. Bloom stresses the importance of the learning history of the student in forming these self-views. He maintains that a few successful or unsuccessful experiences would not have a major effect on the student; it is the frequency and consistency of such experiences over a number of years that would have substantial effects.

He argues that students in the upper or lower end of their class, differ quite a lot in their affect towards a particular subject and school in general, by the end of their third year at school. He considers the relation between academic achievement and academic self-concept to be very strong for the extreme students, while he states that the middle group may be least affected by their school achievement insofar as academic self-concept is concerned. He considers academic self-concept to be clearly defined by the end of primary school years. He further points out that there are small changes for these extreme students in both subject and school-related affect after the third year. It should be noted that the definition of adequacy or inadequacy that Bloom stresses is based on the student's performance relative to the other children in his class and not on some absolute standards of achievement.

Bloom does not make specific proposals on how to alter affective entry characteristics as a means of improving learning. His recommendations are general. He states that if teaching, curriculum and grading policies in the school stress high ratios of successes over failures, this should result in increased amounts of positive entry characteristics for subsequent learning tasks (Bloom, 1976). He also proposes that teachers should identify errors in learning at an early stage and introduce the necessary corrections. If these corrections do not take place, the errors developed in student learning would

become converted to feelings of inadequacy resulting in negative academic self-concepts.

2.10.1.2 Covington and Beery's Self-Worth theory:

Covington and Beery's (1976) argument hinges upon two major assumptions. The first basic claim is that all people are motivated to maintain an image of themselves that is as positive as circumstances would allow. They consider this attempt to maximize success and to avoid failure as a primary motive. The second assumption is that within the context of Western industrialized societies, school success is both highly valued and competitive. The competitive nature of academic achievement means that rewards can be attained by some but not all students. Success at academic work would lead to an increasing sense of competence; failure is threatening because of the fact that a major component of a positive self-image is the view that one possesses a high level of ability. Negative attitudes towards specific subjects and school are the reactions of the individual whose self-worth is threatened.

In order to maintain a view of themselves as people with high levels of ability, people will bias the after-the-event attributions they make and also, in some cases they might engage in behaviour that seems almost guaranteed to bring about low levels of performance. If for example a student is able to attribute a failure to a low level of effort, he will be able to maintain the belief that he has a high level of ability. In a similar manner, by avoiding the exertion of effort, the student will leave open for himself the 'excuse' of not having tried hard enough in the case of failure. What the student tries to avoid is a failure where the only possible explanation is one that implies a lack of necessary ability. The more anxious about failure the student is, the more these 'defensive' attributions and strategies will be used. The lower the student's self-concept, the more anxious he is likely to be about the possibility of failure.

The researchers maintain that the affective and evaluative reactions to causal ascriptions are activated according to different principles. That is, individuals may highly evaluate a

person with low competence who tries hard, but they might feel high satisfaction if they succeed on a difficult task without trying, because such success would indicate high ability. In partly agreement with Bloom, they consider negative self-attitudes and low motivation to be the result of improper learning conditions. They state that *"For one thing, there is no evidence that the process of learning itself is inherently threatening or distasteful. To the contrary, everything points to learning as a natural and adaptive process"* (p. 12).

They posit three factors explaining why the school becomes an instrument of failure for many students. First, is the fact that at school personal evaluation becomes official; the mistakes and errors instead of being considered as a natural part of learning, are interpreted as failures. Second, frequently students are motivated to work for extrinsic rewards and this cheapens their feeling of success. Thirdly, the competitive atmosphere of many classrooms places the standards of a successful achievement beyond the reach of many students (Covington and Beery, 1976, p. 18). They consider that these three factors lead to a scarcity of rewards and force many students to try to avoid failure instead of seeking success.

Covington and Beery derive their ideas from the work of Lewin on aspiration research. They consider success and failure at school to depend not on actual performance but on the student's performance relative to his goals and to classroom standards. They assume a pattern in which self-expectations are low enough to avoid failure but high enough to gain social approval and self-confidence. They are also influenced by Weiner's attribution theory (Weiner et al., 1972) in their discussion about the attributions of success and failure. This theory will be dealt with further on in this work. Here, it is sufficient to say that the researchers posit a difference in success and failure-oriented students' attributions. Success-oriented students take charge of their own achievements, attributing success to their ability and effort and failure to lack of proper effort. For the success-oriented student success is taken as evidence of his ability and further enhances his positive academic self-concept. When he is encountered with failure, he is likely to attribute it to insufficient effort, and focus on the learning

task. In contrast, the failure-prone student, who has a low academic self-concept and is shaken by self-doubts, tries to avoid the task in order to protect himself from facing failure. For the failure-prone student expending effort represents a personal threat, because his ability would be called into question. Consequently, he protects his self-worth by not participating, which seems the best strategy for him under the circumstances. The theorists point out three different tactics that the failure-prone student may use in order to avoid the threatening experience of failure: non-participation, lack of effort and irrational high goals.

In a series of studies with university students (Covington and Omelich, 1979a, 1979b, 1979c) the researchers found that students faced with failure attempt to defend their self-image as people of ability by attributing their failures to lack of effort. Unfortunately, as these students recognised, teachers tend to reward effort, therefore, a fundamental conflict seems to exist between teachers' and students' attitudes. The results of these studies seem to support Covington and Beery's claims, except that all studies have been carried out with university students and not always within an actual learning context. Such a group is highly likely to differ from the general body of school students. In fact research carried out with younger subjects shows that although generally students prefer to be perceived as having high ability rather than exerting high effort, age is an important mediator in their preference of ability over effort attributions. Raviv et al. (1983) by comparing fifth, tenth grade and college students found that the fifth graders used effort as the main determinant of evaluation. More particularly, fifth grade students seemed to believe that the exertion of effort, more than ability, raises the grade given by the teacher; and they felt more satisfaction with exerting effort rather than with possessing high ability, particularly in the case of success.

Several other criticisms could be voiced against the theory of Covington and Beery. Their view that self-worth is solely based on perceived achievement is questionable. Although there is evidence to show that academic achievement is an important source of general self-worth, surely it is not the only source. In such a case their explanation of

low motivation and poor achievement as a reaction to threats towards self-worth is ungrounded.

Another doubtful aspect of their theory is their emphasis on classroom practices as the origin of lack of achievement and the subsequent low academic self-concept. The theorists seem to ignore all other reasons which might have contributed to lack of success at school. Besides, as Norwich (1979) states, they do not seem to consider the possibility of dealing directly with low self-concepts before dealing with the root of the causes. Their discussion is confined to ways by which students would maintain their self-worth by their personal success which matches their aspirations and their abilities, and not by comparing themselves with the performance of others. Empirical research has lent some support to this theory, but the results are not unequivocal.

2.10.2 Teacher Influences:

The role of feedback and the expectations of significant others in shaping self-concept has been already discussed. Feedback from significant others is important in shaping self-concept because it contains others' definitions about oneself, which are incorporated into one's self-definition. Similarly, expectations appear under many circumstances, to influence both the behaviour of the person holding the expectation and the behaviour of the person about whom the expectation is held. Rosenthal and Jacobson (1968) defined an expectation as 'a self-fulfilling prophecy'. Teachers' expectations represent a belief in the particular child's competency and ability, and as such they provide a basis upon which the child's self-concept of ability can develop.

Empirical research has shown that teachers along with parents and peers are a potent source of feedback, especially in the life of primary school children. It is generally accepted that children start school with a basic self-concept of ability already formed by parental communication of succeeding or failing the early tasks at home. At school, teacher evaluations and expectations would serve as an important framework for children's self-evaluations. Teacher expectations would act as powerful mediators

between how children evaluate themselves and how they perform academically. The teacher would interact with a student on the base of his expectations, communicating the message to the student that he has the ability or not to perform the task, therefore putting a limit on his success at school (Jones, 1977). Hamachek (1987) points out that *"When set at reasonable, reachable levels, expectations represent a positive vote of confidence"* (p. 283).

Rosenthal and Jacobson (1968) claimed that teachers' expectancies were in some way actually responsible for the success experienced by some students or the lack of success experienced by others. Findings from studies that used essentially the same basic design as Rosenthal and Jacobson have failed to support the original claim of the authors (Rogers, 1982). However, as all these studies had weaknesses in design, analysis or reporting, interpretation of results is very difficult.

Other investigators carried out smaller pieces of research, the 'analogue studies' (Rogers, 1982). These studies showed clear effects of induced expectancies. However, for the most part these studies demonstrated that the behaviour of teachers differed according to the expectations they had for their students.

A third category of expectancy effect studies are the naturalistic classroom studies. Davidson and Lang (1960) showed a positive relationship between primary school children's perceptions of themselves and their teachers' feelings towards them. They found that the more positive the child's perception of his teacher's feelings towards him the better the academic achievement, and the more desirable the classroom behaviour as rated by the teacher.

Nash (1973) also noted significant positive correlations between the teachers' perceptions of their students and the students' own estimate of their class position. There are other studies which reached similar conclusions. Pidgeon (1970) argued that the extent to which the teacher believed that innate ability played a major role in determining achievement, was decisive in shaping teacher expectations. He states that this factor, linked with similar beliefs about selection and streaming is the major cause of the expectation effect.

In the study of Brookover and Schneider (1975) where different schools were matched for socioeconomic status and race, and allowed to vary on achievement, results suggested that expectations contribute more to the variance in achievement than either socioeconomic status or race.

Research on social climate and teacher behaviour suffers from many problems, especially from a failure to conceptualize variables in terms of testable theory (Anderson, 1982). Especially early expectancy studies have been criticized for methodological flaws (Epps and Smith, 1984). Later studies have focused on whether teachers behave differently toward high- and low-achieving students. Although differential behaviour is often observed, its precise relationship to student achievement remains unclear. It is generally stated that teachers seem to interact more positively with 'brighter' children, and this group then respond by being more effective pupils, thus confirming teachers' expectations.

One of the best-known teacher expectancy studies (Rist, 1970) concludes that both the quality and quantity of teacher-student interaction are affected by naturalistic expectations. Rist argues that at the beginning of their school career children are grouped according to criteria that have no necessary implications for their levels of attainment. The effects of this early grouping, however, are such that when, in later years, groups are established on the basis of past educational achievements, the groups tend to remain the same.

In sharp contrast to Rist's study (carried out in the USA), Murphy (1974) studied teachers in a British primary school and concluded that while teachers do have preferences for 'nice' students, these preferences do not lead to higher levels of achievement as argued by Rist.

At present no firm conclusions can be reached, keeping in mind the methodological weaknesses of the research studies. Leigh (1977) in a consideration of the self-fulfilling prophecy in education states that

"The self-fulfilling prophecy... is not omnipresent in the classroom; what is omnipresent is its potential omnipresence" (p. 323).

We do not know enough to be able to say under which conditions expectancy effects are likely to occur. However, it seems that especially for primary school children, teachers' behaviours and expectations do have an influence on both the academic achievement and the self-concepts of their students. It should also be noted that recent research has recognized the active role played by students in the teaching situation. Students' perceptions of teacher behaviour have been shown to mediate the relation between teacher expectations and student outcomes.

2.10.3 Special Class Placement:

There has been considerable controversy in the literature on the merits of special class placements and its influence on the development of the self-concept. Theorists have assumed two widely divergent positions. Some assume that the effect is enhancing, while others argue that special class placement has a deleterious effect on child's self-concept. Proponents of special class placements state that the environment of the special class which is generally less competitive, tends to reduce anxieties and frustrations of children faced with learning difficulties and therefore tends to foster the development of positive self-esteem. The opponents of this view point out to the detrimental effects of labeling and stigmatization accompanying special class placement.

Although it is generally agreed that special class placement affects the self-esteem of children, there is little empirical evidence providing support for either of the two opponent views. In addition, there are studies (e.g. Harter, 1986; Forman, 1988; Ribner, 1978) which reported no effects of special class placement on samples of LD children. The inconsistency of findings may partly stem from a failure to consider self-concept as a multidimensional construct. One might expect the stigma of special class placement to have adverse effects mainly on self-concept of ability but not necessarily on other aspects of self-concept.

Most empirical studies have concerned the mildly handicapped and very few focused on learning disabled populations. Theorists used the 'frame of reference' hypothesis

(Bachman and O'Malley, 1986; Marsh and Parker, 1984; Marsh, 1987b, Marsh, 1991) to explain the results of relevant studies. This hypothesis is based on two assumptions.

a) Children compare their own academic ability with the abilities of other children within their immediate reference group; and

b) Children use this relativistic impression of their academic ability as one basis for forming their academic impressions.

This hypothesis has been used initially to compare the self-concept of children with different SES backgrounds, but it could apply equally well to academically disadvantaged children who are attending special classes.

Yauman (1980) compared learning disabled children in self-contained classes with learning disabled children receiving remedial tutoring and a control group from regular classes with no history of academic difficulties. Subjects were male, third graders and the instrument used was the Piers-Harris Self-Concept Scale. The results showed that the tutored group had the lowest self-concept, although children in self-contained classes were academically more disadvantaged than the tutored group. He argues that this is probably the result of two factors: the tutored group being in the regular class is faced with greater demands than children in self-contained classes; moreover, this group uses as a criterion for comparison when evaluating themselves the regular class.

Other studies also point out that social comparison may play a key role in the self-perceptions of children in special class placement. Coleman (1983) found that mildly handicapped preadolescents placed in either a resource room or a self contained classroom reported higher self-concept scores on the Piers-Harris Self-Concept Scale than children who attended regular classes even though their teachers indicated that they were having sufficient academic difficulties to warrant special education placement. Coleman suggested that the children's self-perceptions were primarily based on a comparison of their abilities with those of others in their immediate social environment. For children in special classes, the immediate environment consisted of other children with similar problems; for children in regular classes, the comparison group was their normally achieving peers. However, Coleman did not directly test the particular social

comparison reference group used by the children. Moreover, because the self-concept measure used in this study, as in the study by Yauman, yields a total score of global self-esteem, the results may have masked important differences in specific domains.

Renick and Harter (1989) directly examined the influence of social comparison processes on learning disabled children's domain specific perceptions. The subjects were children in grades 3 to 8 who had been attending regular classes while working for one hour every day with an LD specialist in a small group. The Perceived Competence Scale was used to measure children's perceptions in four domains: scholastic competence, athletic competence, social acceptance and global self-worth. The children first completed the entire scale. Then, they were asked to consider only the scholastic competence items and indicate whether they spontaneously compared themselves with their normally achieving peers or their LD peers. Subsequently, children were asked to rate themselves again on Scholastic Competence Subscale, by comparing themselves with a group other than the one which they used in their spontaneous comparisons. Results revealed that LD children perceived themselves to be much more academically competent in the LD classroom than in the regular classroom. The researchers also wanted to examine differences between different domains, hypothesizing that LD students would show the lowest self-perceptions in terms of their scholastic competence in the regular classroom, which was exactly the case. Social acceptance, athletic competence and global self-worth were not found to differ significantly.

Renick and Harter note that 84% of their sample spontaneously compared their academic performance with their normally achieving peers in the regular classroom. This is in contrast with an earlier finding by Silon and Harter (1985) which indicated that educable mentally retarded children tended to compare their academic performance with that of other retarded pupils. Therefore, it seems that children attending special classes are influenced by two different settings, that of regular class and the setting of special class. Knowing which setting they are focusing on in making a judgement about

their academic competence is important in understanding how they feel about themselves.

It is not easy to draw simple conclusions from the literature. It seems that self-concept is directly related to the attributes of the social comparison group within which the child finds himself; however, more research is needed to determine the circumstances under which children attending special classes would compare themselves with their regular class peers or their special class peers, as this comparison would have differential effects on the development of their academic self-concepts.

Some tentative conclusions on the influence of special class placement on self-concept could be drawn from the empirical studies on streaming. Barker Lunn (1970) in a NFER comparative study of streaming and non-streaming, involving 5,500 students in 72 schools, found that the self-concepts of average and below average students were affected by school organisation and teacher type. Those taught by 'non-streamer' teachers -who were permissive, tolerant to noise, and had favourable attitudes to slow learners- in an unstreamed school had more positive self-concepts than their counterparts in streamed schools. The poorest self-concepts in the average ability students were held by students in unstreamed schools, but taught by teachers who favoured streaming. Streaming had beneficial effects on the self-concepts of boys of below average ability, but this effect was not evident for girls. Non-streaming seemed to provide much opportunity for the low-ability child to compare himself unfavourably with his more successful classmates, and this had detrimental effects on his self-concept. The results of this study seem to point out that teachers' attitudes and expectancies are far more important than grouping procedures. Probably what streaming does is to exacerbate the expectation effect. Burns (1986) points out that the danger with streaming, and may be with special class placement, is *"This disturbing tendency to establish and reinforce the child's concept of his ability and perpetuate it"* (p. 298).

2.10.4. The Relationship between Self-Concept and Academic Achievement:

Several theorists accept that there is ample evidence showing a relation between self-concept and academic achievement. West, Fish and Stevens (1980) reported a significant correlational relationship between the two variables ranging from 0.18 to 0.50. Burns (1986) while accepting the existence of a positive relationship, cautions that only 16% of the variance in academic performance can be explained in terms of self-concept level. Wylie (1979) concludes that

"The correlations of achievement indices and overall self-regard indices tend to be small in absolute terms, offering no support to the commonly accepted lore that achievement and self-regard are strongly associated" (p. 406).

A number of studies have shown persistent correlations of 0.40 - 0.60 between academic achievement and self-concept of ability (Chapman, 1988a; Maruyama, Rubin and Kingsbury, 1981; Shavelson et al. 1976). Persistent, though more moderate, correlations of 0.20 - 0.30 have also been found between academic achievement and global self-esteem (Coopersmith, 1967; Rubin, 1978). These relationships were confirmed in a meta-analysis of 128 studies by Hansford and Hattie (1982) who stated, however, that the average relationship appears quite complex, being influenced by grade level, socioeconomic status, ethnicity, ability level, specificity of self-concept measures and type of academic achievement measures.

Burns (1986) argues that the most significant relations between academic achievement and self-concept occur at the negative or low end of the scale. That is, low attainment and failure is more predictably associated with low self-esteem than high attainment and success with high self-esteem. Similarly, Coopersmith (1967) proposes to use self-concept as a threshold variable, that is to say, it may not be as strong or significant in its effect on academic performance when it is at average or above average level, but it seemingly inhibits persistence, confidence and academic performance when the child's self-concept is at a low level.

Bryne (1986) by summarizing the findings of several studies reached two overall conclusions on the self-concept/academic achievement network relationship.

1) General self-concept, academic self-concept and academic achievement although correlated among themselves, are separate constructs. In addition, in studies where subject specific self-concepts were measured, it was found that those too were distinguishable from each other and from general and academic self-concept.

2) Relations among self-concept dimensions are hierarchically structured. As such, the relation between academic self-concept and academic achievement is stronger than the relation between general self-concept and academic achievement. Furthermore, the relation between self-concept in a specific subject and the academic achievement in that particular subject is higher than the correlation between academic self-concept and academic achievement. In fact, academic achievement seems to be highest correlated with the specific academic dimension of self-concept most closely linked with a particular academic ability, moderately correlated with general academic self-concept and uncorrelated with the nonacademic facets of self-concept.

2.10.4.1 Review of Research :

In this section some of the research studies which have provided evidence for the assumed self-concept/academic achievement relationship will be reviewed. Detailed reviews of these studies appear in Bloom (1976), and Purkey (1970). The many different measures of self concept, as well as the different measures of achievement used make the comparison of the results difficult. Some of the studies used indices of global self concept, while others dealt with specific academic self-concepts. Also, a host of achievement measures have been used such as teacher's grades, average grades, grade point averages, standardized achievement tests or intelligence test scores. The bulk of these studies is correlational in nature. Some of these are concerned only with determining an association between self-concept and academic achievement and others focus on establishing a causal direction.

As an exhaustive review of studies is beyond the scope of this work, studies were selected which were mainly done with primary school children as this age group is the focus of this investigation. The studies presented in this review will be distinguished according to the kind of self-concept measures used (global or academic). Also the available evidence for age and sex differences in the self-concept/academic achievement relationship will be examined. The final part of this section includes studies examining the relationship between self concept and underachievement, and the few studies done with learning disabled children.

2.10.4.1.1 Global Self-Esteem and Academic Achievement :

Studies using a general measure of self-concept tend to show that children's global feelings and attitudes about themselves are related to various measures of learning and academic performance (e.g. Coopersmith, 1967; Piers and Harris, 1964). In addition several writers report that students who fail at school tend to have lower self-concepts (Bloom, 1976).

Coopersmith (1967) reports a correlation of 0.30 significant at the .05 level, between SEI scores and grade point average in 86 children aged ten to twelve years. He also found a correlation of 0.28 between SEI scores and IQ. These correlations correspond to the ones reported by Piers and Harris (1964). Of six correlations between their 80-item version of the test and an unspecified achievement test, for children in grades four through six, five were significant at the 0.05 level, ranging from 0.32 to 0.43, except the correlation for sixth grade girls, which was only 0.06. The average correlation between the Piers-Harris scale and IQ measure was 0.27, with only four out of nine correlations significant at the .05 level. Other researchers report similar findings. Trowbridge (1972) found correlations between Coopersmith's SEI scores and achievement in reading to vary in the range between 0.35 to 0.45 rising in relation to the pupils' socioeconomic level. Simon and Simon (1975) report a significant correlation of 0.33 between SEI scores and Scientific Research Associates Achievement

Series for the ten year-old boys and girls of their sample. It should be noted that all these correlations although significant are low, and account for only a small proportion of the variance.

Other researchers, however, failed to find a relationship between measures of general self-concept and school achievement (Cobb, Chissom and Davies, 1975; Williams, 1973). Wylie (1961) believes that this inconclusive state of empirical research which is typical of self-concept studies, is hardly surprising in view of the broad areas of self-concept tapped by most instruments. Besides as Coopersmith (1967) states, it is simplistic to assume that general self-concept is mainly a function of school achievement or intelligence. School achievement constitutes only one of the sources on which children base their global feelings of self-concept and self-esteem. Coopersmith (1975) points out that the correlations between self-esteem and achievement, although they tend to be statistically significant, are not particularly striking, being around 0.20 to 0.30. He argues that these correlations are consistent with a circular relationship in which school achievement is a significant but not a major source of self-esteem, and in which self-esteem influences achievement through such factors as greater persistence on tasks, and higher expectations of success.

2.10.4.1.2 Specific Academic Self-Concepts and Achievement :

As already pointed out, self-concept theorists (Burns, 1986; Marsh and Parker, 1984; Shavelson and Bolus, 1982; Wylie, 1961, 1974) argue that academic achievement measures should be more highly correlated with academic self-concept than with general self-concept.

In the most extensive review of this relationship, Hansford and Hattie (1982) found that measures of achievement correlated about 0.20 with general self-concept, but correlated 0.40 with measures of academic self-concept. Marsh (Marsh, Smith and Barnes, 1984) extended this reasoning and argued that academic achievements in particular areas should be most highly correlated with self-concept in the same area,

less highly correlated with self-concepts in other academic areas, and least highly correlated with self-concepts in non-academic areas.

In agreement with this line of thought, Marsh, Relich and Smith (1983) found evidence that mathematics achievement was substantially correlated with mathematics self-concept (0.55), less correlated with self-concept in other academic areas (Reading 0.21, and General School 0.43), and uncorrelated with self-concepts in four non-academic areas.

Consistent with these results, Marx and Winne (1980), by examining the relationship between academic achievement and academic, social, and physical dimensions of self-concept, found that, whereas the nonacademic facets were inversely related to academic achievement, academic self-concept was positively related.

The main impetus for studies on academic self-concept was derived from the extensive research conducted by Brookover and his colleagues. Brookover, Thomas and Patterson (1964), in a study involving over 1000 twelve-year olds along with a subsample of 110 underachievers, used the Self Concept of Ability Scale developed particularly for studies measuring academic self-concept. They found that academic self-concept correlated positively and significantly with grade point average (0.57), and that this relationship remained substantial even when IQ scores were controlled. They also found that there are specific self concepts of ability which are related to specific subject areas and which differ from the general self-concept of ability. These proved better predictors of academic performance in the relevant area than is the general self-concept of ability.

In their second study, the researchers focused on ways of enhancing self-concept as a means of improving school achievement. They found that when parents' expectations for their children's academic performance were raised, significant increases in academic self-concept occurred accompanied by improved levels of achievement in school. In the third and final stage of their research, the authors (Brookover et al., 1965, 1967) noted that the correlation between self-concept of ability and grade point average ranged from 0.48 to 0.63 over the six years; it fell below 0.50 only among boys in the twelfth

grade. They concluded that a positive self-concept is a necessary but not a sufficient condition for achievement. They suggested that for most students, "*self-concept of ability is a functionally limiting factor in their achievement*" (Brookover et al. 1965, p.202).

Several studies on academic self-concept followed these initiated by the Brookover group with comparable results. Anderson and Johnson (1971) in a study with 114 Hispano American and 49 Anglo American junior and senior high school students, used self-concept of ability scores to predict students' grades in English and Mathematics. In an analysis of self-concept of ability and seven home background factors the coefficients for self-concept of ability were 0.32 for English and 0.31 for Mathematics.

Bloom (1976) quotes 23 large scale correlational studies in which more general or specific measures of academic self-concept are significantly correlated with various measures of achievement. He takes an estimate of 0.50 as the correlation between academic self-concept measures and achievement measures, although he quotes five correlations of less than 0.20. These correlations are difficult to interpret as the significance levels are omitted.

There are also those who report low to negligible correlations between self-concept and achievement measures. Mintz and Muller (1977) examined the correlations between academic achievement and factor specific, as well as global measures of self-concept for 314 fourth and sixth grade boys and girls. The Primary Self-Concept Inventory was used to measure self-concept on six scales : physical size, emotional state, peer acceptance, helpfulness, success and student self. A global self-concept score was derived by totaling the scores on the six scales. The two specific measures of self-concept that were most reflective of school performance, success and student self tended to show low positive correlation (0.26 and 0.39 respectively) with achievement. The global measure, tended to show no relationship to achievement. Mintz and Muller (1977, p. 56) state that

"the most startling result of this study is the universally low correlations between self-concept and achievement".

However, it is possible that the low correlations observed in this study are due to the measures used both for the assessment of self-concept, and the assessment of academic achievement. None of the factors measured by the Primary Self-Concept Inventory is specifically a school achievement factor. Moreover, achievement was measured by a rather global standardized achievement test, and it seems that generally greater correlations are found by using more specific or immediate measures of achievement.

A number of researchers suggest that the type of achievement measure used may influence the strength of the relationship between self-concept and academic achievement. Several studies show that a greater correlation is obtained between academic self-concept and teacher grades, than between academic self-concept and standardized tests or between self-concept measures and IQ.

Wylie (1979) reports correlations of around 0.30 between grade point average and measures of overall self-concepts while correlations between IQ and self measures tend to be low and insignificant. Approximately the same correlations (0.34) are reported by Hansford and Hattie (1982) between teacher ratings and grade point averages and self-concept measures. They too also report a very low relationship between IQ and self measures.

In light of these findings it may be argued that academic self-concepts correlate more highly with teacher grades than any other achievement or intelligence measure. Bloom (1976) attributes this to the fact that, especially for primary school children, teachers' judgements are much more relevant in emphasizing the child's relative standing in the group than standardized test scores. He also argues that such correlations are increased with age; they are relatively low before grade five, after which they are of the order of 0.50. Kifer (1973) also found that correlations between self-concept and teacher marks for students in grades five and seven increased with age from 0.23 at grade five to 0.50 at grade seven.

2.10.4.1.3 Age Differences :

Several studies investigated age differences in general self-concept as well as in different self-concept domains. Wylie (1979) summarizing the research conducted prior to 1977 concluded that there was no convincing evidence for any age effect in overall self-concept -either positive or negative- in the age range 6 to 50. She argued that findings based on specific dimensions of self-concept were too diverse and too infrequent to warrant any generalizations.

Despite Wylie's claims, however, that self-concept does not vary with age, more recent research (Marsh, 1989; Marsh, Barnes, Cairns and Tidman, 1984; Marsh, Craven and Debus, 1991) suggests that there may be a curvilinear effect in which levels of self-concept decline during preadolescence and then increase in late adolescence and early adulthood. These diverse findings may be explained from the fact that early studies of age effects were not based on multidimensional instruments that were psychometrically as sound as the newly developed ones. Therefore, these early studies provide a weak basis for the generality of findings across different self-concept dimensions.

Many studies found children's academic self concept to be high in the early primary grades and decline, on average, thereafter (Beneson and Dweck, 1986; Nicholls, 1978, 1979; Marsh, Barnes, Cairns and Tidman, 1984). However, although academic self-concept declines with age, a bias toward a positive evaluation does not disappear completely (Stipek and MacIver, 1989).

Declines over the primary school years were found in several other dimensions of self-concept, including physical (Marsh, Barnes, Cairns and Tidman, 1984) and social competence. It has been suggested that the decline in academic self-concept found among older children may be more task specific. For example, Eccles et al. (1983) found a decline from fifth through twelfth grade in Maths self-concept but not in English self-concept. The generality of this decline in self-concept levels suggests that it is probably caused by developmental changes in cognitive abilities, plus changes occurring in the educational environment as already discussed in section 2.7.1, and an increasing emphasis on normative evaluation and social comparisons.

Marsh, Barnes, Cairns and Tidman (1984) found such a decline in self-concept in grades two to five with nearly all the SDQ scales, except the subscale measuring relations with parents. This decline was strikingly linear and was similar for boys and girls. They propose that this decline is the result of a social comparison process whereby the added experience gained by attending school causes the initially high self-concept of young children to drop, but has no effect on the Parents' Scale where children have no external basis for comparison. Similar results have been reported by Marsh (1989).

Larned and Muller (1979) in a study of the developmental changes in self-concept involving 1500 children from five to fourteen years old, found that self-concept remained stable in relation to physical self and peer relations; but the academic self-concept showed a fairly drastic decline.

Trowbridge (1972), and Eshel and Klein (1981) also found a sharp decline in general self-concept scores. There are researchers reporting maximum ratings in the early primary grades and a decline in self-concept scores in the middle and upper primary grades.

In relation to the correlations between academic self-concept and measures of achievement, it has been argued that an age trend is also evident. Bloom (1976) states that such correlations are relatively low before grade five, and they become stronger after that. This, he argues, suggests a cumulative effect of school achievement on self concept, with academic self concept becoming clearly defined by the end of primary school years. Kifer (1973) in his quasi-longitudinal study found evidence to support Bloom's hypothesis.

Several other theorists state that school achievement and self-concept are most highly related between the years of about seven to fifteen. Williams (1973) found a high relationship between the two at the fourth grade level; Piers and Harris (1964) noted a similarly high relationship at the sixth grade level as compared to the third grade level; and Rubin (1978) with a sample of 9 to 15 year-olds reported that the relationship between self-concept and achievement increases in strength over this time. These

results are strengthened by O'Malley and Bachman's (1979) study with a sample of 3183 male and female high school seniors, in which they found that educational success becomes less central to self-esteem during late high school years and the years that follow.

Hansford and Hattie (1982), in summarizing the relevant information, conclude that there is an increase in the relationship between self-concept and achievement during the formal school period, and this relationship shows a decrease at college or university level only. It seems fairly clear, then, that there is an increase in the relationship between self-concept measures and achievement during the formal school years.

2.10.4.1.4 Sex Differences:

Results of research studies comparing boys and girls on general self-concept are inconclusive. They vary from indicating no differences (Caslyn and Kenny, 1977; Marsh, Smith and Barnes, 1985), to boys scoring higher than girls (Chiam, 1987; Granleese et al., 1988; Marsh, 1989), and girls scoring higher than boys in some specific domains of self-concept (Boersma and Chapman, 1979; Marsh, Barnes, Cairns and Tidman, 1984).

Burns (1986) argues that sex differences in general self-esteem seem to occur from late primary school age onwards when the young girl realizes that the stereotypic characteristics of female self-image are less valued than those of the male; therefore, boys tend to overestimate their competence, while girls tend to underestimate it. Other theorists, however, do not seem to hold the same opinion. Maccoby and Jacklin (1974) in an extensive review of studies on children's self-concept concluded that the sexes are far more similar than different in terms of self-esteem. A similar conclusion was reached by Wylie (1979) who states that

"the evidence from studies involving well known instruments fails to support a relationship between sex and overall self regard" (p. 273) .

Wylie (1979) noted, however, that sex differences in specific components of self-concept may be lost when a total score is formed. She noted for example that girls tend to have higher self-reported affiliation than boys, a finding which is consistent with Maccoby and Jacklin's (1974) results in regards to social self-concept.

Research from studies investigating specific domains has shown that sex differences vary systematically with the particular facet of self-concept (Bryne and Shavelson 1986; Marsh, Barnes, Cairns, and Tidman, 1984; Marsh, Parker and Barnes, 1985). Several Australian studies found significant sex differences depending on age, the component of self-concept, and the self-concept instrument used (Marsh, Smith and Barnes, 1985). Research with the Self Description Questionnaire (SDQ) has shown large sex differences in self-concepts of Physical Abilities (favouring boys) and Reading (favouring girls), and smaller differences in other areas as well (Marsh, Barnes, Cairns and Tidman, 1984; Marsh, Relich, and Smith, 1983; Marsh, 1989).

However, consistent with Wylie's conclusion there was little or no sex effect in the sum of responses to all the SDQ items. Marsh, Smith and Barnes (1985) found that fifth-grade girls had lower self-concepts in math than did boys, even though their mathematic performance was better, as measured by teacher ratings and standardized tests. Similar results were obtained by Marsh, Bryne and Shavelson (1988) with a sample of 11 and 12 grade Canadian students. They found that girls had higher verbal achievement and higher self-concepts than boys. Boys, on the other hand, had substantially higher math self-concepts than did girls, although their achievement was slightly lower than that of the girls. They argue that these differences could not be explained by differences in achievement and they are rather the result of sex stereotypes.

In summary, there seem to be small sex effects favouring boys for total self-concept measures. However, as Wylie (1979) has suggested these relatively weak sex effects in global self-concept may be a composite of counterbalancing sex differences in more specific areas which are generally consistent with sex stereotypes, and some are favouring boys while others are favouring girls.

A range of opinions occur in the literature regarding the possibility of a sex difference in the self-concept academic achievement relationship. Robin (1978) in his study with nine, twelve and fifteen year-olds found that self-concept ratings at earlier ages are more clearly related to academic achievement for girls than boys. Similarly, Primavera, Simon and Primavera (1974) found a significant relationship between self-concept and achievement for 11 year-old girls in seven academic achievement test (0.21-0.50) but only in one test for boys (0.25). They reasoned that the school at this age plays a greater role in a girl's self-concept because it is a source of approval and praise for girls, while boys seek approval in athletics and other stereotyped male behaviours.

In contrast to these studies, Bledsoe (1964) found significant correlations for boys but not for girls. Also, West and Fish (1973), reviewing 16 studies in which sex was included as a variable in the examination of self-concept/academic achievement question, found that the relationship is either greater for males than females or significant correlations are found for males but not for females. The same conclusion, that the relationship between self concept and achievement appears stronger for boys than for girls, is reached by Purkey (1970) in his review of studies.

Other studies report no sex differences in the self concept/academic achievement correlation (e.g. Brookover et al., 1964). These inconsistencies may be expected in view of the diversity of the self concept measures used.

Hansford and Hattie (1982) based on their data, reached the conclusion that the relationship between self-concept measures and achievement is similar for males and females. West et al. (1980) also concluded that

"...there is lack of agreement among studies as to sex differences in general self-concept, self-concept of academic ability and achievement interaction" (p. 203).

There is some suggestion that sex differences may be revealed by correlating self-concept with different achievement areas. For example, Brookover et al. (1964) reported that self-concept of academic ability correlates higher with grades in social studies for females than males. Bledsoe (1964) reported only the reading comprehension achievement measure and general self-concept correlation to be

significant for females, whereas for males general self-concept was significantly related with reading vocabulary, reading comprehension, arithmetic reasoning, English and spelling. However, the empirical evidence up to now is not enough to warrant any definite conclusions.

2.10.4.1.5 Underachievement Studies :

Some research on the relationship of the self-concept to school achievement has been concentrated on the underachieving child. Combs (1964) in a study with high school children (with IQ 115 or better) found that underachievers saw themselves as less adequate and less acceptable to others and they also saw their peers and adults as less acceptable. He concluded that underachieving but capable high-school boys differ significantly from their achieving peers in their perception of self, others and in general efficiency.

Fink (1962) also studied a group of high school children matched for IQ. Each child was characterized as achiever or underachiever depending on whether his marks fell above or below the class average. The self concept of each student was rated by three psychologists as adequate or inadequate and the three ratings were combined to arrive to a common score. Results indicated significant differences between achievers and underachievers with achievers obtaining more positive self-concepts scores as compared to underachievers. Fink concluded that there was a significant relationship between academic underachievement and self concept, and that this relationship was stronger for boys than for girls.

Kifer (1973) reached similar conclusions in his study with children from grades two, four, six and eight. He examined differences in academic self-concept by comparing children who were either at the top or the bottom 20% of their class. He found only slight differences in grade 2 level; greater differences were observed in grade four, and these differences increased significantly through to grade eight. He concluded that failing students generally indicate lower self perceptions of ability than successful

students, and that these perceptions become increasingly lower over grade levels. From these studies it seems that underachievers tend to have less positive self-concept than normal achievers, but whether there is a progressive decline in self-concept level over the years as Kifer suggests remains to be verified.

2.10.4.1.6 Studies with Learning Disabled Children:

The studies reported in this section are of two kinds. Those looking at the self-concept/academic achievement relation in learning disabled populations and a second group comparing the self-concept of learning disabled and normally achieving children. The majority of reported studies have been carried out in the United States on children with a varying degree of learning difficulty. Most of these studies deal with general self-concept, while a few investigated academic self-concept.

A growing body of research suggests that the self-concept/academic achievement relationship in learning disabled children parallels the relationship associated with the nondisabled. In terms of general self concept the findings are contradictory. Rosenthal (1973) reported that reading performance and SEI scores were significantly associated in a study involving dyslexics and a control group of ordinary school children. Black (1974) matched normal and learning disabled readers in grade three, on age, IQ and sex. He found a significant association between self-esteem and reading, spelling and mathematics scores on the Wide Range Achievement Test ranging from 0.46 to 0.57. He also found that learning disabled readers had significantly lower general self concept scores than their normal peers. Similarly, Smith (1979) in his investigation of school-verified, learning-disabled children aged 7 through 12, concluded that a child's self-concept is definitely related to his academic achievement.

In contrast to these findings, other researchers report that general self-concept is unrelated to academic achievement. Chapman and Boersma (1980) found that general self-concept appeared unrelated to school achievement, and concluded that

"school experiences, attitudes and achievement levels are relatively independent of general self perceptions and evaluations, and the histories of school failure which characterize LD students' (p.73).

Another group of studies compared learning disabled and normally achieving children in terms of both general and academic self-concept. Findings are again equivocal. Some studies report that the two groups vary only on academic self-concept measures (Chapman and Boersma, 1980; Cooley and Ayres, 1988), others have found that global self-concept measures also differentiate between the two groups (Black, 1974). The globality-specific dimension of self-concept measures used in the various studies seems to provide some cues for understanding the controversial findings. Cooley and Ayres (1988) argue that lower academic self-concept is the source of differences in self-concept found between learning disabled and normal achievers and that controversial findings stem from the fact that global measures of self-concept contain items referring to academic self-concept. They found that when the academic component of self-concept was removed, the differences in global self-esteem between the two groups disappeared.

Chapman and Boersma (1980) found no differences in general self-concept in their study with 162 children in grades three to six. They used the Piers-Harris Self-Concept Scale to measure general self-concept. In terms of academic self-concept, they report significant differences between the learning disabled and their normally achieving peers. Academic self-concept was measured by the Student's Perception of Ability Scale (SPAS) developed by them. It contains six subscales, all relating to school. Learning disabled children seemed to hold significantly more negative self perceptions of ability in reading, spelling and arithmetic than did control children, and these negative subject-related attitudes had generalized to lower perceptions of ability in general. They found that differences in academic self concept seemed well established in grade three and remained constant through to grade six.

In a study with older children in grades five to twelve, Pearl and Bryan (1982) also report no differences in general self-concept for learning disabled children. In another

study reported by Chapman (1988) academic self concept was investigated over a 2-year period for 78 children identified as learning disabled and 71 normally achieving children. The results again indicated lower academic self-concepts for LD children who also showed signs of learned helplessness and reported lower achievement expectations. These differences were well established by the start of the first year of the project and remained consistent through to the end of the second year. Chapman also reports lower academic self-concepts for boys as compared with LD girls. He offers the explanation that this may be due to the fact that boys obtained lower overall achievement scores than did LD girls.

In their study of fourth to seventh grade learning disabled, average and gifted students, Winne et al. (1982) found expected differences in academic self-concept, but differences among groups in respect to the other self-concept facets were variable, that is, lower levels of performance associated with one facet tended to be compensated with higher levels of performance on another facet.

Kistner et al. (1987) compared primary and middle school learning disabled children, in four domains (scholastic and physical competence, social acceptance and global self-esteem) using the Perceived Competence Scale (Harter, 1982). In accord with previous research, learning disabled children were found to hold lower opinions of their cognitive competence compared to their normally achieving peers. They also had less favourable perceptions of their physical abilities. However, the groups did not differ in their perceptions of social competence and global self-esteem.

Similar results are reported by Harter (1989) in a study with third to eighth grade children. Children were again compared in four domains using the Perceived Competence Scale. Harter found that only the Scholastic Competence Subscale differentiated between learning disabled and normally achieving children.

Differences in the cognitive domain between learning disabled and normally achieving children are reported for a younger age range (6 - 7 year olds) by Priel and Leshem (1990). The researchers state that despite the positive bias characteristic of this age

group, the evaluations of learning disabled children concerning their cognitive abilities were lower than their normally achieving peers.

The empirical findings, then, as regards academic self-concept seem to point to a consistent direction, a less positive academic self-concept for LD children. The contradictory results found in relation to general self-concept may have different explanations.

First, the results of the different studies are often not comparable due to the variety of measures used.

Second, the fact that global measures of self-concept also contain items which refer to academic self-concept, as already discussed. Besides, the self-concept scales used have not been standardized on an LD population and this may distort the results. It might also be that the presentation of a favourable self-concept is a defensive reaction on the part of learning disabled children. Alternatively it could be argued that LD children may have negative feelings which are specific to academic achievement but they also believe that they have personal attributes which make them worth individuals.

2.10.5 The Causal Predominance Issue:

Judging from the studies already reviewed, it appears unquestionable that a persistent relationship exists between academic achievement and academic self-concept. The presence of this correlation does not by itself though establish a causal relationship. However, most theorists are willing to accept that this relation is at least reciprocal (Caslyn and Kenny, 1977).

Many others argue that the self-concept/academic achievement relationship is asymmetrical. Considerable disagreement exists concerning the direction of this causal asymmetry (Bryne, 1984). There are those who argue that self-concept influences academic achievement, while others emphasize that academic achievement determines self-concept. On theoretical grounds one could argue for different patterns of causation. Four possible causal models could be stated:

1. Achievement causes self-concept. This model suggests that the children who do well at school, come to form a strong, positive self-concept.
2. Self-concept causes achievement. Following the lines taken by the symbolic interactionists, it is hypothesized that children would come to internalize the attitudes of significant others towards them. These self-attitudes will then lead to appropriate styles of behaviour. The child who comes to acquire a strong self-concept will have the confidence to tackle new tasks and he will be more likely to believe that he is capable of succeeding at school. These behavioural characteristics, then, are likely to lead towards higher levels of achievement at school.
3. Achievement and self-concept influence each other in a reciprocal manner.
4. Third variables cause both achievement and self-concept (e.g. social class, ability, certain characteristics of the teacher).

Although many early research studies indicated that differences in academic performance were associated with differences in self-concept levels, the direction of causality could not be specified as most early studies tended to be correlational in design.

Prior to the 1960s, the prevalent view emphasized the influence of academic success on self-concept. A study by Gabbler and Gibby (1967) shows the effects of feedback indicating failure upon self-concept level and intellectual productivity. The subjects had never before failed school. An experimental and control group were both administered three tests -an English grammar test, the Gibby Intelligence Rating Schedule and a Test of Word Fluency. Three days later, both groups were given again a test of word fluency, but just before the testing, the subjects of experimental group received slips of paper indicating that they failed the previous test. The scores of the two groups were then compared. It was found, that the children in the experimental group tended to regard themselves as less highly and performed less effectively.

Kifer (1973, 1975) working with a sample of students in grades five to seven found evidence to suggest that a positive self-concept was the result of successful academic

experiences. He argued that it is the pattern of success/failure and the accumulation of experiences over a period of time that affect an individual's self-concept.

Caslyn and Kenny (1977) proposed the method of cross-lagged panel correlation to establish which of the two variables, academic self-concept or achievement was causally predominant. They found a reasonably consistent predominance of academic achievement over academic self-concept in a variety of comparisons, thus supporting the skill development model (the notion that self-concept is a consequence of academic achievement). Their analytic technique represented an improvement over most previous research. However, Marsh (1990a) points out that cross-lagged correlation studies may be inappropriate for examining relations between self-concept and achievement, because neither the causal predominance of one variable over the other nor the lack of any causal predominance can be used to test whether a reciprocal relation exists.

Bachman and O'Malley (1986) analyzed longitudinal data using an a priori causal model. The predominant causal direction was assumed to be from academic performance to self-concept of ability to global self-esteem. They found a strong relationship between grades throughout the previous year and self-concept of ability. The impact of academic achievement on global self-esteem occurred via self-concept of ability.

Newman (1984) considered math achievement tests and maths self-concept scores collected in grades 2, 5, and 10, and analyzed the data employing a Structural Equation Model. For the interval from Grade 2 to Grade 5 and from Grade 5 to Grade 10, prior achievement had a significant effect on subsequent math self-concept, but prior math self-concept had no effect on subsequent math achievement. However, there are two important methodological considerations. The sample size was rather small for Structural Equation Model standards, and academic self-concept was inferred on the basis of responses to a single self-response item. Marsh (1990a) argues that the data were not strong enough to justify either the conclusion that prior achievement affects subsequent self-concept or that prior self-concept has no effect on subsequent achievement.

Harter (Harter and Connell, 1984) also employed a Structural-Equation Model to predict the relationships between achievement, perceived competence, and intrinsic versus extrinsic motivational orientation in the classroom. For a sample of third through nine graders, it was found that achievement is causally prior to perceived cognitive competence. Perceived competence in turn preceded one's motivational orientation.

Other studies present the opposite argument that self-concept affects academic attainment, and self-concept enhancement results in improvement in academic performance. Brookover et al. (1965) attempted to discover whether enhancing the academic expectations of low achieving students will improve their performance. They did this by increasing positive parental feedback to the students, by having an expert inform the students about their ability, and by presenting a significant other (a counsellor) whose high academic expectations might be internalised by the students. They found that the first approach was the most successful. As parental perceptions changed in a positive direction, so did the self perceptions of students. The researchers concluded that academic self-concept can be influenced by the evaluation of significant others and that this can lead to improved performance. However, this improvement was not maintained when the treatment ceased.

Wattenberg and Clifford (1964) found evidence suggesting that a negative self-concept may affect a skill such as reading even before children enter first grade. In their study with 128 nursery school children, they measured intelligence, self-concept, ego strength and reading ability. They re-measured the children when they have finished grade two. They found that measures of self-concept and ego strength made at the beginning of nursery school were more predictive of reading ability two and a half years later than were measures of intelligence.

Lamy (1965) demonstrated similar results. He found that nursery school children's self-perceptions were as good a prediction of later reading achievement as intelligence test scores. He suggested that the perceptions children have about themselves are not only related but also may be causal factors in their subsequent reading achievement.

Recently more sophisticated methods of analyses have been used to examine causal predominance between self-concept and academic achievement. Shavelson and Bolus (1982) measured different aspects of self-concept and academic achievement at two time periods with a 4-month interval in a panel study of 99 seventh and eighth grade students. Separate LISREL analyses were conducted, with grades and self-concept in either English, Maths or Science among the variables. They found that prior academic self-concept affected subsequent performance, whereas the effects of prior achievement on subsequent academic self-concepts were not statistically significant. They cautioned, however, that given the size and the nature of the sample, generalization of these findings should be considered tentative.

The findings of Skaalvik and Hagtvet (1990) in their longitudinal panel study supported the occurrence of reciprocal relationships between self-concept of ability and achievement with an increasing effect of self-concept on achievement. Marsh (1990a) reached a similar conclusion analyzing data collected in grades 10, 11, 12 and one year after graduation from high school. He concluded that reported grade averages in grades 11 and 12 were significantly affected by academic self-concepts measured the previous year, whereas prior reported grades had no effect on subsequent measures of self-concept. However, he emphasizes that

"..relations between academic self-concept and academic achievement are likely to be reciprocal" (p.654).

Scheirer and Kraut (1979) in their review of published studies and 18 doctoral dissertations concerned with the impact of intervention programs on the self-concept and academic achievement of school children, found no evidence of causal connection between the two variables.

Finally, in her two extensive reviews, Bryne (1984, 1986) concluded that empirical research does not allow any firm conclusion about the causal ordering of self-concept and academic achievement. She states that her conclusion was based on the three prerequisites underlying the establishment of causal predominance as noted by Shavelson and Bolus (1982): that a statistical relationship between self-concept and

academic achievement must be established; a time precedence must be established; and a model of the causal relationship must be specified.

To summarize, the empirical research does not allow any firm conclusions about the causal ordering of self-concept and academic achievement. In addition to methodological problems, the interpretation of the research is further complicated by the results of Hansford and Hattie's (1982) meta-analysis, showing that the relationship between these concepts may vary with age, self-concept definition and measure of academic achievement.

It seems that in most discussions of the nature of the relationship between self-concept and academic achievement the implicit assumption has been generally made that there is one relationship that will apply more or to all age groups. However, it seems that the nature of the causal relationship between the two constructs varies with age. The few studies with a developmental concern (e.g. Bridgeman and Shipman, 1978) seem to point to the following conclusions:

First, feelings of self-esteem seem to develop before those concerned with a self-concept. As shown in Coopersmith's (1967) study, factors related to some of children's earliest experiences are associated with levels of self-esteem. Furthermore these early experiences are closely concerned with the development of beliefs that one is able to exercise an influence upon the world with which one has to deal.

Second, studies measuring self-concept indicate that levels of academic success are more likely to be the cause of self-attitudes rather than the result of them. It seems that on entry to school the child's initial level of self-esteem will tend to play a determining role as far as school success and failure is concerned. As these successes and failures accumulate, an academic self-concept begins to emerge with more specific aspects relating to particular school activities. At this stage the academic self-concept would reflect levels of academic performance rather than determine them. As the child moves through primary school and on into secondary, this relationship will gradually begin to change. The academic self-concept will influence the child's more general sense of self-esteem which in turn will exercise a causal influence over academic performance. Thus

at some stage the relationship between self-concept and academic achievement becomes reciprocal. Academic achievement raises or lowers self-esteem, while self-esteem influences subsequent performance through expectations, standards, motivation and level of persistence on learning tasks.

2.11 Self-Concept and Locus of Control/Causal Attributions:

One's sense of active control and one's explanatory style, are critical dimensions of self evaluation. This idea can be found in the early writings of Cooley (1902). He was the first to stress the importance of 'self-feeling', the idea of the exercise of power of being a cause. Bannister and Agnew (1977) saw the personal sense of cause as one of the definite features of the self. Similarly, Brim (1976) considers this construct to be central to one's self theory. He states that :

'One sense of personal control is in fact a system of belief, i.e. a theory about oneself in relation to one's environment, and a concern with causality, whether outcomes are a consequence of one's own behaviour or tend to occur independently of that behaviour'(p.243).

From the social learning theory perspective, Bandura (1977, 1981) notes that, among the different facets of self knowledge, personal efficacy is the most central. For Bandura, self efficacy is primarily concerned with judgements about how well one can accomplish actions in specific future situations. He argues that during the critical formative period of children's lives, the school functions as the primary setting for the cultivation of cognitive efficacy.

Theorists from different theoretical approaches, then, seem to agree that the attitudes an individual holds about himself are closely related to the locus of control variable. A person who is low in feeling of personal adequacy and self-esteem, is more likely to be oriented towards external control rather than internal control. On the other hand, the high self-esteem person should feel more in control of what he does and what happens to him rather than under control from outside forces. A similar link is thought to exist

between self-concept and attributional style. High self-concept individuals are more likely to exhibit what is thought as a 'healthy' attributional style, that is, attributing successes to internal causes such as ability or effort, and failures to external such as task difficulty. The opposite pattern is found to hold true for low self-concept individuals.

These differences in locus of control/attributional style have differential behavioural consequences for the individuals who hold them. A link between locus of control and academic achievement would seem logical given that a disbelief in the contingency between one's efforts and outcomes should preclude achievement striving. Empirical evidence shows that children who believe that their academic successes are contingent upon their own actions perform better than those who do not (Seligman, 1975). Also those who believe that successes are caused by internal, controllable causes (like effort, Weiner, 1979) or they believe that they possess high ability (Harter, 1985; Stipek, 1980) perform better academically.

The dominant theoretical lines within the field are locus of control research and attribution theory. Both theories will be presented here, and the empirical relationships between locus of control/causal attributions, self-concept and academic achievement will be explored through a review of the relevant literature. Finally, learned helplessness theory will be examined as particularly relevant to children with learning difficulties.

2.11.1 The construct of Locus of Control:

The construct 'perceived control' has been used by theorists interested in motivational and cognitive accounts of behaviour (Lefcourt, 1976, 1982; Phares, 1976). The largest body of empirical data about perceived control derives from Julian Rotter's (1954, 1966) social learning theory.

For Rotter, internal versus external reinforcement control meant individual differences in the belief that one's own actions and its results can generate desired ends. Rotter's construct involved the contingency between one's own activity (and its results) and its consequences mediated by others. However, the result of an action was not consistently kept separate of the consequences of the action within this line of research. In his terms, internal control refers to the perception of events, whether positive or negative, as being a consequence of one's own actions and thereby potentially under personal control. The generalized expectancy of external control, on the other hand, refers to the perception of positive or negative events as being unrelated to one's behaviour and therefore beyond personal control (Lefcourt, 1982).

Social learning theorists suggest that an individual's behaviour in achievement situations is influenced by his perceived locus of control. If he believes that the outcome is contingent on his behaviour, then, academic success will increase the likelihood of his instrumental behaviours such as attention or persistence at future tasks. If there is no perceived contingency between outcome and behaviour then academic success will not increase the likelihood of such instrumental behaviours in the future. Rotter (1975) clarified that besides an individual's expectation that a particular behaviour will bring a particular reinforcement, the value of the expected reinforcement is also important.

Different methodological emphases are adopted by different researchers in the study of locus of control. Some theorists study control in a relatively global, trans-situational sense, while others take a more situations specific approach. Social learning theorists argue that situational variables influence an individual's perception of the contingency of reinforcement as does a generalized expectancy that developed from past experiences in similar situations. Rotter (1975) notes that the relative importance of the generalized expectancy goes up as the situation is more novel and ambiguous and goes down as the individual's experience in that situation increases.

Another point of differentiation among theorists is the definition of control from a phenomenological or an objective point of view. Weisz (1983a, 1983b) advocating an

objective point of view, defines control as the individual's capacity to cause an event consistent with his intentions. He posits two factors, contingency (the relevance of behaviour to an intended event) and competence (the individual's capacity to manifest the attributes on which the intended event is contingent) as both relevant to a definition of control. He stresses the need to assess both of them accurately if one is to judge an individual's capacity to exercise control. Weisz points out that causality alone does not necessarily imply control but control does imply causality of a certain type, that is the capacity to cause events consistent with one's intentions. Skinner and Chapman (1984) seem to make the same point by arguing that an individual's beliefs that he can control an outcome imply: a) causality beliefs of the form, "Y results in X"; and b) agency beliefs of the form "I have or I can produce condition Y". (p.3).

A contrasting approach is taken by other theorists (for example Wong and Sproule, 1984) who see perceived control as a phenomenological experience, and differentiate it from coping (attempts to control the environment and oneself) and from objective contingency.

In the most recent treatment of locus of control several refinements have been made including recognition of situational specificity and multidimensionality of locus of control. Situational specific scales refer to people's expectancies of control in specific situations, or areas of concern. For example the Intellectual Responsibility Questionnaire (IAR, Crandall et al., 1965) has been specifically developed for academic situations. The Multidimensional Measure of Children's Perceptions of Control (Connell, 1981, 1985) assesses judgements of perceived control in three domains: cognitive, social and physical. Several scales have also made the distinction between expectancies of control over situations with positive or negative outcomes (Connell, 1980, 1985; Crandall et al. 1965).

The work on locus of control recognizes only the internal-external distinction among causes. The serious limitation of this one-dimensional taxonomy was realized when it was discovered that various responses regarding expectancy and evaluation are displayed given causes with an identical locus. For example, in achievement-related

contexts, failure perceived as due to lack of ability results in lower expectancies of future success than failure believed to be caused by a lack of effort. This shows that the two causes differ in more than one respect, although both are considered to be properties of the person. It was recognized, therefore, that internal and external control beliefs can be subdivided into other dimensions. The most popular basis for assessing subdimensions of control beliefs is the causal attribution model of Weiner et al. (1972) to be discussed in the next section.

2.11.2 Attribution Theory:

Attribution theory although influenced by Rotter's social learning theory, differs from it in two important ways: First, it has placed more emphasis on particular causes and argued that these cannot be explained in a single external-internal dimension. Second, it primarily stressed the effects of situational variables that are experimentally manipulated.

Weiner's (Weiner et. al, 1972; Weiner, 1974, 1979, 1980, 1986) basic claim is that the present and future achievement behaviour of the individual could be understood by making reference to that individual's previous and present explanations of the causes of instances of successes and failures in which he has been involved. People are thought to respond not simply to experiences of success and failure as such but to their interpretations of their successes and failures which are largely determined by the causes they hold responsible for them.

Essentially Weiner has taken one of the prevalent theoretical models of achievement motivation and applied to it the basic ideas in attribution theory. The theoretical system that Weiner has adopted is the expectancy x value approach to the study of achievement motivation, particularly the work of Atkinson. The basic idea is that an individual's motivation to engage in any particular task on which it is possible to either succeed or fail, is a function of the extent to which he expects to succeed and the value that he places on actually obtaining this success.

Attribution theorists typically postulate four causal factors, ability, effort, task difficulty and luck as having particular significance; however, other factors such as the influence of others, environmental influences and a host of idiosyncratic causes were cited by subjects when open ended questions were employed (Weiner, 1979). Initially, Weiner (1974) argued for a two-dimensional classification scheme for the perceived determinants of achievement behaviour. This model is a 2 x 2 matrix in which ability, effort, task difficulty and luck are organised along the dimensions of locus and stability (Figure 3).

Figure 3

Weiner's Two-Dimensional Classification Scheme for the Perceived Determinants of Achievement Behaviour.

		Locus of control	
		internal	external
Stability	stable	ability	task difficulty
	unstable	effort	luck

In a later formulation of the theory Weiner has put forward three dimensions of causal factors as being particularly important (Weiner, 1979). The first of these is the internality dimension. Ability and effort would be common examples of internal factors while other people and task difficulty would be examples of external factors. Two points are important in relation to this dimension. The internality/externality of a particular cause is always defined from the point of view of the person making the

attribution. Second, it should always be the attributors judgement that determines the location of a particular cause.

The second dimension of causality is that of stability which characterizes causes on a stable versus unstable dimension. Ability, the difficulty of task and patience are regarded as relatively fixed, whereas, luck, effort and mood are more unstable. Weiner et al. (1971) propose that the stability of the causal attributions is a more important determinant of persistent behaviour than is the causality dimension because it affects an individual's expectancies about future success. Success at academic tasks attributed to stable factors such as high ability results in higher future expectancies than does success attributed to unstable causes such as luck. In a similar manner, failure attributed to stable factors such as low aptitude results in lower future expectancies than does failure attributed to unstable factors such as low effort (Weiner et al., 1972). Stability involves a relatively unchanging cause during the time period and across the situations one wishes to generalize to. Abramson, Seligman and Teasdale (1978) limit the concept of stability to stability over the same situation over time, and use the concept of globality to define the generalizability of the cause over other related situations. They suggest that attributing a negative situation to both stable and global causes leads to depression and feelings of helplessness. Bandura (1977) makes a similar distinction when he points out to the difference between contingency and control. He argues that an individual may believe that a particular course of action would produce certain outcomes (contingency), but if he entertains serious doubts about whether he can perform the task such information does not influence his behaviour.

A third dimension of causality first proposed by Heider (1958) and called controllability (controllable-uncontrollable) was later added to the main dimensions. Some causes such as effort are likely to be perceived as controllable; whereas, for example, ability or mood are uncontrollable causes. This results in eight cells or types of attributions (i.e. $2 \times 2 \times 2$).

These three main dimensions have important consequences. They are related to the individuals' cognitive reactions (such as expectations regarding future outcomes), to

their affective reactions (such as esteem related affects and interpersonal judgements), and to their behavioural reactions (such as achievement related behaviours).

As already pointed out, Weiner (1974, 1979) postulated that expectancy for future success is determined by stability of causes. Failure at an achievement task attributed to unstable causes may result in expectations for eventual success, since unstable causes may change. Failure due to stable causes, on the other hand, is expected to continue, since the causes are believed to remain. This implies that once an expectancy for success or failure has been developed it is difficult to change, a fact which may lead to a self-fulfilling prophecy, where those who expect to do well continue to have high expectations, and those who have low expectations will maintain them regardless of how well they actually perform.

The locus of causality is an important determinant of affective reactions. Weiner, Russell and Lerman (1978) found that causal attributions of a desired outcome to the self (effort and/or ability) result in certain positive emotions, such as feelings of pride, confidence and positive self-esteem. Failure, perceived as caused by lack of effort, and especially lack of ability, causes negative affect and a loss of self-respect (Weiner, 1979). Further, if the negative outcome is attributed to stable internal factors (ability), the result is feelings of hopelessness and resignation.

The attribution model (Weiner, Russell and Lerman, 1978) assumes a three phase progression of affects: first, the general affect of success or failure; then, affects specific to attribution, and finally affects that correspond to an entire attribution dimension (e.g. internality affecting the concept of self-esteem). The model also predicts that outcomes attributed to internal factors produce stronger affective reactions than those attributed to external factors.

Originally, Weiner suggested that attributions of an outcome to internal causes, such as ability or effort, increase an individual's affective reactions of pride in the case of success and shame in the case of failure. Furthermore, he posited that

"causal ascriptions to effort, which is an internal cause under volitional control, maximize positive and negative affects for success and failure" (Weiner, 1974, p. 32).

This proposition, however, has been questioned on several grounds. First, as already discussed in section 2.9.1.2, several studies indicated that students do not always exert high effort, because of a fear to be perceived as having low ability (Covington and Beery, 1976). Second, although Weiner's model analyses affective reactions to attributions, the great majority of studies supporting these assumptions investigated evaluative reactions. As Covington and Beery state, affective and evaluative reactions may differ substantially, that is an individual may be highly evaluated for trying hard, but feel high satisfaction when he succeeds without trying, because such success, indicates high competence. Third, as Sohn (1977) pointed out, the relevant studies did not directly compare the evaluative or affective reactions between ability and effort attributions, but make comparisons within each cause.

Weiner's attributional theory is intimately tied to the self in as much as a) causal ascriptions often concern properties of the person, such as level of ability; b) the emotional consequences of ascriptions include self-confidence and self worth, and c) the assumption of mastery strivings, which form the basis of the attributional formulation, suggest growth and expansion of the self (Weiner, 1984).

The Weiner attribution model conceptualizes the achievement process as a multi-stage process, involving an achievement event, which is interpreted as success or failure, followed by a causal explanation for why this success or failure occurred. This causal attribution has subsequent consequences for affect and future expectancies which then will determine future achievement orientation and behaviour. Weiner (1980) argues that in order to reach causal inferences individuals utilize and combine various sources of information. In addition to that, they also have preferred informational cues which greatly influence their judgements. Weiner (1980) also points out that gender and achievement needs greatly influence the causal preferences of the individual.

As referred to above, attribution research differs from locus of control research not only in that it places more emphasis on particular causes, but in that it has primarily stressed the effects of situational variables that are experimentally manipulated. A point of confusion is whether what Rotter labelled 'locus of control' should be distinguished

from what Weiner labels 'locus of causality'. Weiner (1979) proposed that locus of causality and locus of control should be treated as two separate causal dimensions. Locus of causality refers to assignment of causality to various loci, such as persons, stimuli or circumstances. Locus of control is concerned with the assignment of responsibility which seems to be a more complex judgmental process than causal attribution. In Weiner's terms control is a causal dimension along with others and has to do with the perceived controllability/uncontrollability of cause rather than outcome. The distinction is an important one because the controllability of a cause is not necessarily related positively to perceived controllability of an outcome. Generally positively valued uncontrollable causes such as intelligence or ability increase one's sense of control over outcomes, whereas negatively valued uncontrollable causes such as incompetence decrease one's sense of control (Wong and Sproule, 1984). However, the conceptual differences between the two dimensions are often not recognized, and frequently the two are equated.

Weiner's three dimensional model of attribution is based on a logical analysis of the attribution process. Empirical support for it is summarized by Weiner (1979, 1980). Most of the studies testing these hypotheses have been done with adults. The adult data tend to support Weiner's proposals. Evidence from studies done with children, however, appears inconclusive.

A study by Ruble et al. (1976) provided evidence on the relationship between attributions of performance and the affective response of children. In contrast to Weiner's proposal and the results from adult studies, that affect is greatest when success or failure is attributed internally, it was found that when social norm information was provided, children's pleasure in success was not enhanced by an internal attribution.

It is possible that important developmental differences have not been adequately explored to draw conclusions regarding the applicability of Weiner's model to young children. There is ample evidence that the stability and control dimensions of Weiner's

model might be important in predicting the actual behaviour of children in achievement situations.

The achievement behaviour which is more often investigated is task persistence. Dweck and Goetz (1978) found that children who persist and pursue alternative solutions, attribute failure to variable factors particularly to lack of effort; those who show impaired performance tend to attribute failure to invariant factors such as ability. Similarly, Dweck and Reppucci (1973) found that children who showed deteriorated performance took less personal responsibility for the outcomes of their actions. When these children did accept responsibility, they attributed success and failure to the presence or absence of ability rather than effort.

Despite the empirical support many theoretical questions remain unresolved. Weiner did not specify if his theoretical dimensions are orthogonal or assumed to be correlated. Certain combinations (e.g. external/controllable) appear to be mutually exclusive, so that some of the eight cells in the Weiner model may be empty. For example, few external causes are controllable by the subject. Furthermore, the stability and the control dimensions are highly related. Unstable causes (e.g. effort) are more likely to be under the control of the individual than stable causes (e.g. ability). In addition, the relation between these dimensions and outcome has not been specified adequately. An extensive body of research shows that attributions do not appear to generalize across success and failure outcomes (Crandall et al., 1965).

Another point concerns the phenomenal aspect of Weiner's taxonomy, which becomes particularly important where children are concerned. Weiner stresses that a subject's categorization of a cause is based on the factor's subjective meaning to the individual. Although there tends to be general agreement regarding the classification of some causes, there is variation both across individuals and across situations. Ability would be classified by most adults as an internal, stable, uncontrollable cause. For a young child, however, ability may appear less stable. Accordingly, while adults who attribute failures to lack of ability would generally hold low expectations for future performance, children may continue to have high expectations for future success.

Another criticism voiced against attribution theory is relevant to the number of causes it uses to explain success and failure. Although the most important and most regular cited causes seem to be ability and effort, research has shown (Bat-Tal and Darom, 1979) that a wide variety of causes could be used by subjects to explain instances of success and failure, such as fatigue, mood, luck, the influence of other people particularly a teacher, and unknown causes. Furthermore, it should be noted that the attribution model has been developed to describe adult attributions. It has been assumed that the range and type of children's attributions, the meanings attached to them, and the dimensions used to organise them are the same as those of adults. However, these are questionable assumptions, not adequately examined by research.

Little (1985) with a sample of British children in the age range 5 - 14, examined types of explanations used to explain success and failure in a free response interview. His results lend considerable support to Weiner's (1974, 1979) statements about the centrality of ability and effort attributions. But he found that an ability attribution could mean several things each of which had different implications for the attribution process. He also expresses reservations about the meanings of organising dimensions (locus, stability, control) pointing out that taxonomical classification of attributions should make clear whose taxonomy is being used - the psychologist's or the child's.

Attribution theory has been also criticized for its exclusive reliance on a situational approach in empirical research (Stipek and Weisz, 1981). There is little evidence that the theoretical dimensions derived from highly structured experimental settings would remain valid in explaining the individual's behaviour in natural settings. This is more so, as the attributional process seems to be affected by both situational and dispositional characteristics (Marsh, Cairns et al., 1984). Weiner (1980) himself argued that *"it is expected that there are individual differences in causal preferences that influence attributional decision making"* (p.338).

Weiner's model was not specifically designed to explain dimensions of individual differences. However, the situational dimensions derived from his model have been treated by some theorists as if they also provide a valid summary of individual

differences in the way individuals make self-attributions. Perhaps because of this situational-dispositional confusion, some attribution theorists refer to dimensions of attributions as attributional styles (Ickes and Layden, 1978). Undoubtedly the value of the Weiner model would be greatly enhanced if the same dimensions that have been supported by situational studies are also found to apply to dispositional differences; but this remains to be proved by future research.

A final point of criticism refers to the importance of distinguishing between self-attributions and attributions about hypothetical others. In attributional research subjects are typically asked to form attributions about hypothetical others. Weiner (1980) himself recognized the importance of distinguishing between these two kinds of attributions. Similarly, Sohn (1977) has argued that results based on self-attributions need not agree with those based on attributions about hypothetical others and presented evidence that demonstrated the importance of this distinction.

Other theoretical formulations (e.g. self-worth theory - Covington and Beery, 1976; learned helplessness theory - Abramson, Seligman and Teasdale, 1978) have been developed since 1972 which share some of the central features of attribution theory. Abramson, Seligman and Teasdale's (1978) view of human helplessness (to be discussed in section 2.10.3) represents an integration of Weiner's cognitive approach to perceived control and Seligman's (1975) construct of learned helplessness. Recently, Weisz (1983a, 1983b) and Weisz and Stipek (1982) presented a two-dimensional model of control judgements that include the degree to which outcomes are seen to be contingent upon one's behaviour (perceived contingency) and whether one feels competent to produce the required behaviour (perceived competence). Skinner, Chapman and Baltes (1988) have also presented a new conceptualization of perceived control in which three conceptually independent sets of beliefs are distinguished: control beliefs, expectations about the extent to which agents (e.g. the self) can obtain desired outcomes (I can produce Y); means ends beliefs, expectations about the extent to which certain potential causes produce outcomes (there exists an X which leads to Y); and agency beliefs, expectations about the extent to which agents possess potential

means (I have access to X). They further assume that these three types of beliefs can be arranged along different dimensions, such as a dimension of specificity-generality (globality), ranging from extremely situation-specific to highly generalized beliefs.

2.11.2.1 Intra-individual Asymmetry of Attribution Pattern:

Among the individual differences in attribution patterns, there is a well established general bias: People tend to make dispositional attributions for their successes and situational attributions for their failures. That is, they tend to attribute success to stable, central aspects of self and failure to external factors or unstable and less central aspects of self (Heckhausen, 1987). Such a pattern is generally viewed as having a motivational basis and as serving to enhance one's self-esteem.

Miller and Ross (1975) termed this asymmetry the 'self-serving' bias. The origins of this bias asymmetry are still the source of some debate. Two classes of explanations have been given. The first emphasizes the role of motivational sources. The most common version of this approach asserts that self-serving attributions arise from people's needs to maintain and defend a positive self-image. From this perspective people attribute success to high ability because it fosters the belief that they are competent; conversely they attribute failures to external factors because this allows them to escape the conclusion that they are incompetent.

The cognitive model makes a different set of assumptions. Miller and Ross (1975) proposed an 'information processing' explanation that suggests that the self-serving bias is a reasonable and logical way to view situations because a) most people intend and expect success and are more likely to accept responsibility for expected outcomes; b) people discern a clear covariation between behaviour and outcomes in the case of increasing success than in the case of constant failure; and c) people hold erroneous conceptions of contingency that cause them to associate control with the occurrence of desired outcomes.

It appears that both motivational and cognitive factors play a role in producing the 'self-serving bias'. Greenwald (1980) has labeled this tendency to perceive more personal responsibility for favourable outcomes than for unfavourable ones 'beneffectance' and he argued that 'beneffectance' may afford adaptive advantages by enhancing affect and persistence. However, he also noted that the inaccurate control judgements that constitute beneffectance can have adverse effects, such as stimulating persistence at fruitless or even harmful activities.

However, research shown that this asymmetric attribution pattern is not universal; there are individuals and groups who seem less inclined to adopt a self-esteem enhancing attribution pattern, and they rather make attributions which are self-esteem reducing. On the basis of these different attribution patterns, it is possible to process information about identical achievement outcomes into different self-evaluations. This implies that the success expectancies and behavioural consequences for individuals adopting different attributional patterns will be different as well. Those who adopt self-esteem enhancing attribution style, seem motivated to expend more effort and persist on the task even after repeated failures. The individuals with attributions patterns involving self-blame and self-criticism will hardly be more self-confident even after a series of successes. It has been argued (Fitch, 1970) that such persons have acquired a negative self-image to which they adhere, even at the face of many positive experiences which contradict it. However, the findings concerning problem groups, such as 'depressives' and 'failure-motivated', have not in all cases indicated that they deviate from the general self-esteem enhancement attribution asymmetry (Heckhausen, 1987).

Researchers who studied the phenomenon of self-serving bias point out the importance of content specificity in the interpretation of it, as it seems that individual differences in the phenomenon do depend on the particular content being judged. For example, subjects who show this tendency to the greatest extent in attributions to mathematical outcomes are not the same subjects who show this tendency to the greatest extent for reading outcomes. It seems that students who are the most able in a particular content area have the highest self-concept in that area and show the largest self-serving bias.

This argues against the assumption that the self-serving bias is a simple response that might be expected from an individual who tries to distort his public image; rather it seems to be systematically related to self-perceptions that subjects have about their abilities in different content areas.

2.11.2.2.The Origin and Development of a Control Orientation and Attributional Style:

It has been argued that the interaction with adult evaluators as well as the personal dispositions of the individual are important in shaping one's control orientation and attributional style. Lefcourt (1976) states that

"Warmth, supportiveness, and parental encouragement seem to be essential for the development of an internal locus of control" (p.100).

Crandall (1973) has shown that such nurturing is important in the early years, but later must be coupled with an emphasis on independent training in order to yield the greatest likelihood of internality. However, parental behaviours and child-rearing practices are likely to interact with certain child characteristics such as sex. For example, empirical research shows that the effects of certain parental and teacher behaviours are different for boys and girls.

Buriel (1981) in an extensive study with fourth and fifth grade Anglo-American and Mexican American children evaluated the relationship between locus of control and parents' and teachers' socializing behaviours. Paternal support was positively related to internal control for success (I+) in boys but not in girls. Teacher demands were positively related to internal responsibility for failure (I-) for boys but negatively related for girls.

The definition of a particular event as a success or failure and the making of an attribution for it, seems to be a highly subjective and complex process; different people seem to use various criteria in making such a judgement in addition to considering the actual outcome. Two broad categories of determinants could be discerned.

- a) Those that are particularly related to the person making the attribution; and
- b) Situational factors.

Personal dispositions can be further subdivided into demographic status (such as age and sex), the history of academic successes and failures, and the personal dispositions of the individual.

A number of researchers (Crandall et al., 1965; Lefcourt, 1976; Nowicki and Strickland, 1973) have found support for a developmental pattern in children in which degree of internality increases with age. Ruble (1978) points out that developmental influences can be seen in children's concepts of the various constructs important for achievement and in the ways in which these constructs are processed or integrated. Some of the concepts in which developmental changes have been noted are the concepts of ability/effort and success/failure. (Harari and Covington, 1981; Heckhausen, 1982; Nicholls, 1978; Stipek, 1984). As already pointed out in section 2.8 the accuracy of judgement increases with age (Beneson and Dweck, 1986) and young children (before the age of 7 or 8) tend to overrate their competence.

Nicholls (1978) has shown that a developmental process is involved in children's understanding that more difficult tasks require more ability for successful completion. He found that young children use a "halo schema" to relate effort and ability to outcome. Positive outcomes tend to be viewed as reflecting both high ability and high effort, whereas negative outcomes are viewed as reflecting low ability and low effort. Outcome, effort and ability are thought to be positively correlated. As they approach middle elementary school years children begin to distinguish between ability and effort as independent dimensions, but even so, effort is still considered the overwhelming causal factor in achievement. It is argued that around the age of ten, effort is no longer seen as either a precondition or a guarantee of success, and ability becomes the all decisive factor (Heckhausen, 1982). Older children seem to perceive a compensatory relationship among ability, effort and outcome. A positive outcome, for example, typically will be explained by high effort and lower ability (thus, effort compensates for

ability). Moreover, children show differences in processing achievement information as they develop cognitively. And although children as young as fourth graders can use information to form causal judgements in the same way as adults, they make more systematic and finer discriminations as they get older (Frieze and Bar-Tal, 1980).

Sex differences (to be discussed in greater detail in a subsequent section) are also relevant to a locus of control orientation and attributional style. Empirical studies indicate that females tend to be more external, to employ more luck attributions, and rate their ability less highly than do males (Dweck et al. 1978; Nicholls, 1975). Similarly, race and socioeconomic status variables (SES) were found to influence attributional styles and locus of control.

The history of academic performance is considered important in shaping personal conceptions as to what causes produce specific effects. A comparison of the achievement with past outcomes indicates the stability of the causes involved. On the basis of this comparison, the child can know whether the outcome was unusual due to unstable-uncontrollable causes, such as luck or other's help; due to unstable-controllable causes, such as effort; or usual, stable causes such as ability. The consistency of the achieved outcome with past results on the same task increases the attribution to stable causes, such as ability, while an inconsistent outcome increases the attribution to unstable causes such as effort or luck (Frieze and Bar-Tal, 1980). Knowledge about others' performance may also be important information for attribution. A history of poor performance relative to others, would lead to attributions of success to external factors rather than internal and attributions of failure to poor ability (Frieze and Bar-Tal, 1980).

Finally, personal dispositions such as the need for achievement seem to influence causal attributions. Empirical studies (e.g. Bar-Tal and Frieze, 1977) have demonstrated that individuals high in achievement needs tend to attribute success to ability and effort, while those low in achievement needs do not display clear attributional patterns for success. In cases of failure, people high in achievement needs tend to attribute failure to lack of effort, people low in achievement needs tend to

attribute it to lack of ability. Differential attributions were also found with regard to self-esteem tendencies (Ames and Felker, 1979; Fitch, 1970). Results show that low self-esteem persons tend to take more personal responsibility for failure than do high self-esteem persons.

Important situational factors include the nature of the task, classroom situation and feedback from significant others. Information about the nature of the task provides insights regarding the causes of achievement. Frieze and Weiner (1971) found that the amount of time a child spends on a task influences the causal ascription. When a short time is spent at a task, failure tends to be attributed to lack of effort and success to the ease of the task or to good luck. However, when the individual spends long time on the task, failure is ascribed to bad luck or task difficulty, while success is attributed to the presence of effort.

Both parents and teachers seem to ascribe causes to children's successes and failures and communicate their attributions to the children either directly or indirectly. Teachers' influences on children's self-perceptions and academic achievement have been discussed at length in section 2.9.2. Here only a short reference will be made to the proposals of Bar-Tal (1978, 1979) who extended the Weiner model and applied it specifically to the classroom situation, where it is used to analyse the perceptions and behaviours of students and teachers in interaction. The model suggests that many classroom situations involve evaluation of students' achievements as success and failure. In these situations both teachers and students tend to ascribe causes to explain the students' success and failure on achievement tasks (Bar-Tal and Darom, 1979; Bar-Tal et al. 1980). The teachers' causal ascriptions, which may not correspond to those of their students, are important determinants of teachers' behaviour towards their students. The relationship between teachers' causal perception and their behaviour towards students can be explained through the mediating process of the teachers' expectations regarding students' future outcomes. The model also suggests that students' achievement behaviour influences teachers' causal perception of students'

success and failure and that teachers' behaviour towards students determines students' causal perception of their success and failure.

2.11.3 Learned Helplessness:

An integration of the Weiner et al (1972) cognitive approach to perceived control and Seligman's (1975) construct of learned helplessness is presented in Abramson' Seligman' and Teasdale's (1978) view of human helplessness that results from lack of control.

Learned helplessness refers to an interference in learning resulting from an experience with noncontingent reward, and to the underlying process hypothesized to be responsible for this interference: the learning of response-reinforcement independence and its generalization. The term 'learned helplessness' was initially used by animal learning researchers (Seligman and Maier, 1967) to describe the impaired performance of dogs produced by prior exposure to uncontrollable aversive events. According to the original formulation, exposure to objective noncontingency leads to a subsequent impairment in learning as a result of a learned expectation of response-reinforcement independence and interferes with the acquisition of escape avoidance learning. Once the organism learns that its responses and outcomes are independent it generalizes this belief to situations in which control is, in fact, possible. The perception of helplessness in a particular situation decreases the likelihood of initiating and sustaining task-relevant behaviour and this clearly corresponds to a very low probability of future success.

The learned helplessness model has generated a great deal of research with both animals and humans. The animal studies have provided fairly convincing evidence for the model (Maier and Seligman, 1976), although alternative explanations for these results have been proposed and inconsistencies in the findings have been noted. However, when the model was applied to humans, the evidence was less clear-cut (Miller and Norman, 1979). Some researchers claimed to have produced the helplessness effect: interference with learning as a result of an experience with noncontingent reward

(Dweck and Reppucci, 1973). Other researchers, however, claimed to have found something quite the opposite of helpless behaviour: Subjects exposed to an experience with noncontingent reinforcement seemed to behave less passively and perform better than control subjects on the experimental tasks designed to test for helplessness effects (e.g. Roth and Bootzin, 1974).

It soon became evident that, in studies with humans, several other factors should be considered besides the objective noncontingency (as specified by the animal model), such as the manner in which objective noncontingency is experienced by human subjects, the kind of reinforcement (positive or negative), the importance of the task, and the role of causal attributions.

This led to a reformulation of the learned helplessness theory that was designed to solve the inadequacies in the original theory (Abramson et al., 1978). The reformulated hypothesis is based on the attributional model of Weiner's concept of causality (internal-external) and stability (stable-unstable). Seligman has added to these the dimension of globality (specific-general). The key construct of the original theory has been retained, that is, the idea that uncontrollability leads to an expectation of helplessness which in turn leads to deficits. However, in addition, the role of causal attribution is considered as vitally important. According to Abramson et al. (1978), for helplessness to occur, individuals must not only experience uncontrollable outcomes, they must develop expectations that future outcomes will also be uncontrollable. Such expectations are thought to depend on the attributions made for why such noncontingent outcomes occur. The hypothesized causal chain consists of objective noncontingency, leading to perception of noncontingency, leading to attribution of noncontingency, leading to expectation of future noncontingency, leading to symptoms of helplessness.

Three dimensions along which explanations can vary were said to influence the helplessness deficits that individuals experience following an event: the internality, stability and globality of factors. The dimension of globality seems particularly important as empirical evidence indicates that the helplessness effect may generalize

from one task to another, not remaining specific to the task in which this was learned. Individuals who develop a generalized expectation of inability to control future outcomes are particularly vulnerable to the development of learned helplessness and depression. Abramson et al. (1978) explained the individual differences in vulnerability to helplessness by arguing that people who habitually explain bad events by internal, stable, and global causes (and good events by external, unstable and specific causes) will be more likely to experience general and lasting symptoms of helplessness than will people with the opposite style. The reformulated model, then, is a diathesis-stress model, in which a bad explanatory style is viewed as a factor that predisposes the individual to helplessness in the face of bad events.

The researchers argue that the effects of learned helplessness are apparent in three realms: motivation, cognition, and emotion. Motivationally, one's perception that outcomes are independent from one's response destroy the impetus to initiate responses and leads to passivity. Cognitively, one's perception that outcomes are independent on one's responses interferes with subsequent learning in situations in which outcomes are not independent of responses. Emotionally, learned helplessness results in sadness and lowered self-esteem (Abramson et al., 1978).

Various studies demonstrated that this theory can be meaningfully used to explain the behaviour of adults as well as children. Nolen-Hoeksema, Seligman and Girus (1986) argue that children who possess an explanatory style that makes them view the causes of bad events as stable in time, global in effect, and internal to themselves will be especially vulnerable to a defined cluster of helplessness deficits which is thought to consist of lowered response initiation, cognitive deficits, sadness lowered self-esteem and lowered assertiveness.

The dominant theorist and researcher in the application of learned helplessness theory to child development has been Dweck and her colleagues (Dweck, 1975; Dweck and Bush, 1976; Dweck, Davidson, Nelson and Enna, 1978; Dweck and Goetz, 1978; Dweck and Light, 1980; Dweck and Reppucci, 1973). Dweck and Light (1980) have shown that school children can be 'helpless' in the face of failure and, further, that

attributions play an important role in the development and maintenance of this helplessness.

Dweck and her colleagues have found that some children tend to explain academic failure in terms of stable and global causes and explain success in terms of unstable, specific causes. These explanatory styles were found to correlate with decreased persistence, decreased initiation of tasks, lowered quality of problem-solving strategies, and lowered expectations of future success. A group of studies compared the kinds of attributions made by those who persevered in tasks and those who gave up. The perseverers believed that success was due to their own efforts and they tended to try harder until they succeeded. The non-perseverers believed that they had little or no ability for the task, and therefore, regardless of how much effort they expended, they expected that the outcome would always be the same -failure.

In the first study, Dweck and Reppucci (1973) showed that attributions about effort were particularly significant as 'learned helpless' children discounted the importance of effort following the experience of failure. Forty fifth-grade students (20 males and 20 females), divided into two groups, persistent and non-persistent subjects, participated in the study. The role of academic locus of control and attributional style (effort versus ability) were measured by the Intellectual Achievement Responsibility Questionnaire (IAR, Crandall et al., 1965). The children experienced success at the hands of one adult (solvable block designs) and failure from another (unsolvable block designs). A number of children failed to complete problems administered by the 'failure' adult when the problems became solvable even though they had shortly before solved almost identical problems from the 'success' adult. Those who showed the largest performance decrements were those who took less responsibility for the outcomes of their actions and who, when they did accept responsibility, attributed success and failure to presence or absence of ability rather than to expenditure of effort. Those who persisted in the face of prolonged failure placed more emphasis on the role of effort in determining the outcome. These mastery-oriented children did not seem to take a personal view of failure, but seemed to view negative feedback as a challenge, and

consequently increased their persistence and task performance. Reaction to failure, then, was the characteristic that differentiated the two groups.

Diener and Dweck (1978) obtained similar results in two studies exploring differences between 'helpless' and 'mastery-oriented' children. Seventy fifth and sixty sixth grade children participated in the two studies respectively. Before the experimental stage was introduced, the children were categorized into either a learned helpless or mastery-oriented group according to attributions made concerning their role regarding effort or ability. Those who, in determining their failure tended to neglect the role of effort were placed in the helpless group. All children were asked to begin thinking loud as they performed the task. During the training of the task phase, the two groups performed comparably and made similar verbalizations about their performance. However, during the arranged failure phase, a marked difference was noted in the verbalizations of the two groups. The helpless children tended to dwell excessively on their failures and attributed them to lack of ability; they made ineffectual statements which seemed to interfere with the problem-solving task. Mastery-oriented children made surprisingly few attributions but instead engaged in solution-oriented behaviour such as self-instructions and self-monitoring. Also they were reluctant to perceive themselves as failures.

The researchers point out that the difference between the two groups is not only in the nature of attributions, but when or whether attributions occur. Helpless children seem to concentrate on the cause of their failure and, given their attributions to uncontrollable factors, spend little time searching for ways to overcome failure; mastery-oriented children, on the other hand, seem less concerned with past failures and more interested in producing future success. These findings are consistent with the distinction made between state orientation and action orientation (Kuhl, 1981), and with the task-irrelevant cognitions observed during an oral examination in subjects for whom a failure-oriented motivational state was dominant (Heckhausen, 1982).

Dweck (1975) conducted a study to find out if by altering attributions of failure would enable helpless children to deal more effectively with failure. Twelve extremely helpless

children were identified and were given intensive, relatively long-term experience with one of two training programs : a success-only treatment, and an attribution-retraining treatment. The 'success-only' group continued to show severe deterioration in performance after failure, while the 'attribution-retraining' group maintained or improved their performance. In addition, the subjects in the second group showed an increase in the degree to which they emphasized insufficient motivation versus ability as a determinant of failure. The researcher points out that success experiences are not going to change the low-ability perceptions of failure-oriented children, and that children need to be taught how to handle failure.

The studies reported so far make clear that helpless and mastery-oriented children differ not only in the attributions they make when asked to explain their failures; they show major differences in their performance strategies and the classes of cognitions that they entertain under failure. Helpless children not only view their failures as indicative of incompetence and unsurmountable but also view their successes as irrelevant to their competence. Mastery-oriented children take their successes as a sign of intelligence.

A developmental approach to learned helplessness appears to be important because learned helplessness is closely related to causal attributions which change substantially during middle childhood years. The literature suggests that the nature of younger children's attributions may cause them to be less susceptible to helplessness than older children. Parsons and Ruble (1977), working with children between 3 and 11 years old, found that experiences of success and failure have a greater effect on expectations for future successes and failures among older children. For their younger subjects, repeated success and failure on the experimental task did not significantly increase or decrease expectations for success. They suggest that either younger children do not typically attribute outcomes to stable causal factors like ability, or that attributions to causal factors like ability do not form a basis for generalized expectations because younger children do not think of them as stable. In support of the first alternative is Nicholls's (1978) finding that younger children believe that ability is a less important determinant of outcome than effort. Nicholls (1978, 1979) also found that young

children's estimation of their abilities only gradually come to be correlated with their actual histories of success and failure.

A second potentially important developmental trend in regard to helplessness is thought to relate to children's understanding of the way in which effort and ability interact to determine outcome. The fact that younger children view outcomes as reflecting both ability and effort may suggest that these children are less susceptible to helplessness than older children who perceive a compensatory schematic relationship among ability, effort and outcome. This hypothesis is supported by a study by Rholes et al (1980). They tested nursery to fifth grade children by exposing them to repeated failure or to repeated success on hidden figure problems. Helplessness was measured by the child's persistence in looking for the hidden figures and their capacity to find them following repeated success or failure. They found that younger children showed no evidence of helplessness. Researchers point out that these results do not imply that younger children never experience helplessness but only that they are less susceptible to it.

Consideration of sex differences is also important in examining learned helpless behaviours. Boys were generally found to attribute their successes more to their ability and their failures to lack of effort, whereas girls tended to attribute their successes to effort, luck and ease of the task and their failures to lack of ability (Dweck and Reppucci, 1973; Nicholls, 1975). Moreover, sex and age of the agent of negative or failure feedback also appeared to be factors in the kinds of causal attributions that subjects made to explain their behaviours. Girls were most impaired by negative feedback from adult female evaluators, whereas boys were most impaired by negative feedback from male peer evaluators (Dweck and Bush, 1976). However, more research is needed before any definite conclusions could be reached.

The fact that learning disabled children have been found to hold negative academic self-concepts (Black, 1974; Chapman and Boersma, 1980), to express less optimism about future accomplishments (Chapman and Boersma, 1980; Butkowsky and Willow, 1980), to and discount actual success has led to the hypothesis that these children are at risk for the learned helplessness found in adults (Seligman, 1975). Indeed the

descriptions of learned helpless attitudes and behaviours parallel the descriptions of learning disabled children.

Thomas (1979) examined the learned helplessness literature and attempted to relate the data to the difficulties faced by the learning disabled children. He argued that the failure to learn or do well in an academic setting may be caused by the child's cognition that he simply cannot learn since every attempt to learn within an academic setting has been met with failure in the past. However, despite the hypothesis advanced by Thomas (1979), it should be noted, that existing empirical research is limited and contradictory and the studies referred to above, have not used learning disabled children. Pearl et al. (1980) were the first to apply helplessness theory to study the attributional preferences of learning disabled children. Children's attributions were obtained through individual interview sessions; no actual experience with objective noncontingent failure was provided. It was found that compared to controls, learning disabled children significantly minimized the importance of effort as a source of failure in academic and non-academic settings.

Butkowsky and Willows (1980) compared children of good, average and poor reading ability in tasks in which success and failure were manipulated. They found that poor readers displayed characteristics indicative of learned helplessness and low self-concept of ability. These included significantly lower initial estimates of success, less persistence, attributions of failure to lack of ability and of successes to external factors, and greater decrements in expectancy of success following failure.

In contrast, Swartz et al. (1983) in their study with third, fourth, and fifth grade LD and normally achieving children, found that the learning disabled group was no more affected by helplessness than normal children. They offer two explanations for their results. They suggest that learning disabled children are helpless in many respects, but that this helplessness is largely reversed by third or fourth grade through the efforts of special education instruction; or it might be that learned helplessness is not really a factor in the behaviour of the learning disabled child, who may in fact, not be a helpless child at all. A study by Johnson (1981) provides some support for the hypothesis

advanced by Swartz et al. that special education may help children to overcome their helplessness.

It seems that no firm conclusions can be drawn from the evidence so far. Although, many researchers seem to agree that the salient characteristics of learned helplessness - the attribution of failure to lack of ability and non-persistence at tasks- are exhibited by learning disabled children, it could be that factors such as age, sex and situational circumstances serve to alter the picture. An additional complication is created by the varying interpretations of the personality characteristics of children afflicted by learned helplessness. For example, according to Kirk and Chalfant (1984), learned helplessness is characterized among other things, by the belief that failures are caused by personal deficiencies and successes are due to external events beyond the children's control. On the other hand, Dweck (1975) suggests that learned helplessness is characterized by the belief that both failures and successes are caused by external factors (Dweck and Reppucci, 1973). This difference may stem from the fact that Kirk and Chalfant base their interpretation on findings from studies comparing learning disabled and non learning disabled children, whereas Dweck's interpretation is based on studies comparing unlabeled children who had been identified as persisters or non-persisters.

2.11.4 Review of Research:

In this section, research pertinent to the relations between academic achievement and the constructs under study (self-concept, locus of control and causal attributions) will be reviewed. The review includes studies with learning disabled children as results from this studies are considered particularly relevant for the special class sample used in this study.

2.11.4.1 Self-Concept and Locus of Control/ Causal Attributions:

A variety of measures of self-esteem has yielded consistently small but significant relations to locus of control orientation, such that greater internality is associated with higher levels of self-esteem. Prawat, Grissom and Parish (1979) administered Coopersmith's SEI and the Nowicki-Strickland locus of control scale to children in primary, middle and high school. They found a consistent and high relationship for both males and females, with correlations ranging from 0.58 to 0.66, at all three educational levels. However as both scales were global measures of the constructs concerned, a more differentiated pattern of relationships between the two variables was not possible.

Ickes and Layden (1978) found that high self-concept subjects were more likely to attribute success to internal causes, whereas low self-concept subjects attributed success to external causes. For failures, low self-concept subjects tended to internalize responsibility, and high self-concept subjects to attribute it to external factors. Fitch (1970) reported similar results in his study. He found that males with high self-esteem attributed success more to internal causes than those with low self-esteem. The low self-esteem group also made more attributions to internal factors for failure.

In another study by Felker and Thomas (1971), using the Piers-Harris self-concept scale and the Intellectual Achievement Responsibility Questionnaire (IAR), a significant relation was found between self-concept and responsibility for success in girls; for boys self-concept was significantly related to responsibility for failure. In contrast, Piers (1977) found that for both boys and girls self-concept was significantly related to responsibility for success but not for failure.

These studies provide some evidence for a relationship between self-concept and locus of control, although there are inconsistencies as regards the dimensions of gender and the extent to which responsibility is assumed for success and failures. These inconsistencies may be due to the global nature of the instruments used to measure self-concept and locus of control. It is also possible that person mediator variables influence the relation between self-concept and locus of control. Research has shown, for

example, that the so-called defensive and congruent externality might constitute a mediating factor in the self-concept/locus of control relationship. Defensive externals are those who answer externally on locus of control scales but who behave internally in competitive situations such as those involving academic achievement. By presenting themselves as externals they protect themselves against failure. The congruent or true externals genuinely believe that reinforcement and behaviour are independent. Evans (1980) proposed that defensive externals may be differentiated from congruent externals by low self-esteem. In addition to defensiveness and congruence, other person variables that might moderate the relationship between locus of control and behaviour include level of anxiety, age, race, and initial confidence level.

Empirical studies also provide evidence showing that specific attributions that people make for performance outcomes do influence their self-esteem and affective states. Most of the studies testing the hypotheses derived from the attributional model have been done with adults. The evidence for children is limited and inconsistent. Moreover, measurement procedures in attribution research have not been adequately developed, and issues such as reliability and construct validity have rarely been considered (Stipek and Weisz, 1981). The poor quality of measurement and the lack of comparability of measurement procedures used by different researchers makes the comparison of results from different studies a very difficult endeavour.

There is evidence suggesting that the way children attribute outcomes to such causes as ability, effort and luck are related to school achievement, self concept and academic behaviours (Ames and Felker, 1979; Bar-Tal, 1978; Covington, 1984; Covington and Omelich, 1979a, 1979b, 1979c; Crandall et al. 1965; Marsh, Cairns et al., 1984; Weiner, 1979). As already discussed, a substantial body of literature has demonstrated that subjects are more likely to attribute their successes to internal causes such as ability and effort, while attributing failure to external causes. This tendency to internalize responsibility is found to be positively correlated with self-concept (Burns, 1986).

Although attribution theorists typically postulate that the most important perceived causes of academic success and failure are four -ability, effort, task difficulty and luck-,

ability rather than effort was investigated as the critical dimension differentiating high and low self-concept children. Two theories are especially relevant to the self-concept/causal attributions relationship: the self-worth theory (Covington and Beery, 1976, discussed in detail in section 2.9.1), and Weiner's theory of affect (Weiner, 1979, 1984; Brown and Weiner, 1984).

Weiner (1979), in discussing the relationship between self-concept and attribution, suggested that people with high self-concept will probably attribute success to ability and failure to unstable factors such as mood or luck; people with a low self-concept will attribute success to unstable causes and failure to lack of ability; thus both groups would maintain their self views in this way. Weiner's initial position was that effort perceptions are of paramount importance in guiding personal affective reactions (Weiner and Kukla, 1970). Weiner and Kukla demonstrated that reward from others is maximal given a positive outcome and high effort, whereas punishment is maximal given a negative outcome and low effort. They also documented that pride is reported as greatest when success is ascribed to high effort, whereas shame is augmented given an attribution of failure to a lack of effort and the reward value of success is related to the difficulty of the task. In a later work Weiner (1978, 1979) reevaluated this earlier position and concluded that many affects (e.g. happiness, satisfaction) depended primarily on the outcome rather than any particular dimension and some affects are primarily associated with a particular attribution. He argued that ability attributions were associated with feelings of incompetence and lack of confidence (given failure) and competence and confidence (given success). Effort ascriptions, on the other hand, were linked with guilt for failure and, to a lesser extent, with pride for success. In examining the relationship between academic attributions and academic affect, Weiner postulated that positive affect in response to success and negative affect in response to failure will be maximized when subjects internalize responsibility (make attributions to ability and effort). This set of predictions is illustrated by Bar-Tal (1978) in his review of implications that attribution theory has for education.

This altered theory of Weiner et al. was questioned by Covington and Omelich (1979a, 1979b) who argued that the relationship between academic attributions and affect is quite different for success and failure. Failure despite great effort is compelling evidence of low ability and therefore should maximize shame, but this negative feeling should be reduced somewhat when the outcome could be explained as lack of effort. For success they found, that the reciprocal relationship between effort and ability was quite small for self attributions as effort in this case represents little personal threat, and success at difficult tasks requires both effort and ability. Furthermore, they found a positive covariation between effort and ability for affective reactions. Children felt most positive when they succeeded through both ability and effort. When asked to make comparisons children preferred to succeed as a result of high effort/high ability, though high ability/low effort was preferred to low ability/high effort.

In agreement with Covington and Omelich (1979a, 1979b) there is evidence to show that individuals prefer to have failed because of lack of effort rather than lack of ability and to have succeeded because of high ability rather than high effort. Nicholls (1975) found that attribution of success to effort is associated with greater anxiety and less positive anticipations of forthcoming success. In a subsequent experiment, Nicholls (1976) introduced the independent variable of task importance and examined attributional preference as well as affective ratings. He noted that

"pride over success was associated with high effort and low ability, while shame over failure was associated with low effort and high ability" (p. 310).

He also found that these relations were enhanced in a high importance task condition. Nicholls (1976, 1978, 1979) predicted that success/effort would correlate negatively with self-concept, whereas failure/effort would correlate positively with it. He did find support for his predictions for success/effort attributions in a study with 10 and 12 year old males, but not for the failure/effort ones. However, even this limited support is in direct conflict with results from other studies (Covington and Omelich, 1979b; Marsh, Relich and Smith, 1983; Marsh, Smith and Barnes, 1983) which presented evidence showing that there are positive feelings associated with succeeding through effort.

Marsh and his colleagues argue that a favourable self-concept is consistent with attributions to ability, but they also view effort as an important causal attribution of success. They maintain that a favourable self-concept is consistent with attributions to ability and effort as causes of success, but not with a tendency to attribute failure to lack of effort and especially not to lack of success.

Ames (1978) put fifth-grade children into pairs and gave them tasks to complete in which one of the pair succeeded and the other failed. Results showed that high self-concept children attributed success more to their high ability and engaged in more positive self-reinforcement following success than did low self-concept children. This difference in ability attributions was particularly marked under competitive conditions.

Ames and Felker (1979) in a study with 156 children examined whether differences in self concept would be reflected in how children categorize incoming information, that is, how they interpret the nature of the task. All children completed the Piers-Harris Self-Concept Scale and six puzzles drawn from a stock at random. The instructions were intended to create ambiguity over the causal determinants of performance. Thus children could perceive their performance on the task as caused by their own skill or by luck. As expected, high more than low self concept children attributed their success to skill. Low self-concept children tended to reject success by taking little responsibility for the outcome. High self-concept children also engaged in more self-reward for success. There were no differences between the two groups in their causal attribution for failure outcomes; but the low self-concept group responded with more self-punishment. Thus, it seems that high self-concept children maintain their positive self-concept by attributing their successes to skill or ability and failure to unstable factors, while for low self-concept children the opposite is true. The study also shows, that two critical factors that are considered important for achievement-directed behaviours - beliefs about one's ability and self reinforcement mechanisms- are strongly related to self-concept.

In contrast to the bulk of attributional research which has employed a situational approach, Marsh, Cairns et al. (1984) in their study, adopted a dispositional approach

in investigating the relationship between self-attributions and self-concept. Their sample consisted of 248 fifth-grade students attending four public schools in Australia. They used the Sydney Attribution Scale (SAS), a scale designed to measure academic content (maths, reading, general school); outcome (success/failure); and perceived cause (ability, effort, and external causes). The SAS provides separate measures for mathematics, reading, school subjects in general, a design that parallels the three academic dimensions of the Self Description Questionnaire (SDQ). Self-concept was measured by the SDQ, and achievement was measured by two standardized achievement tests. Their findings were generally consistent with self-worth theory. They found that consistent with research on the self-serving bias, children were more willing to internalize responsibility for success than failure. However, this tendency varied significantly with the particular cause being judged. The difference in ratings of success/failure outcomes was quite large for ability attributions, somewhat smaller for effort attributions, and nonexistent for external attributions. They also found that for success outcomes, academic self concept was positively correlated with both ability and effort attributions; for failure outcomes academic self-concept was negatively correlated with ability attributions and less negatively correlated with effort attributions and that the attribution/self-concept correlations were content specific.

Marsh (1984) replicated the findings by Marsh, Cairns et al. in a study with 559 fifth-grade students. The SAS and SDQ were used to measure attributions and self-concept respectively. Achievement was measured by standardized achievement tests for Reading and Mathematics. He found that students who attribute their academic success to their own ability and to their own effort tend to have higher academic self-concepts and better academic skills. Students who attribute their academic failure to a lack of ability and, to a lesser degree, to a lack of effort tend to have lower academic self-concepts and poorer academic skills. Marsh (1984) points out that academic self attributions like academic self-concepts are specific to particular content areas and do not generalize from one content area to the other; in contrast, they are quite specific to outcome and type of cause and to a lesser extent to the area of academic content.

The last two studies imply that conclusions from situational studies may not explain individual differences in the way children perceive the causes of their success and failures. Marsh, Cairns et al. (1984) argue that such a conclusion challenges the assumption that dispositional differences in the way children form academic self-attributions can be adequately described by a single dimension (e.g. internal/external) or the three bipolar dimensions proposed by Weiner which generalize across outcomes, academic content areas, or even different types of perceived causes. Clearly, there is a need for more studies adopting a dispositional approach before any definite conclusions can be drawn.

It seems difficult to generate a clear set of predictions about the attribution/self-concept relationship on the basis of the studies reviewed in the literature. However, most writers would agree that a disposition to attribute success to internal causes will be positively correlated with high self-concept, though some might argue that the relationship will be stronger for success/ability than for success/effort attributions. They also seem to agree that the disposition to attribute failure to ability will be negatively correlated with self concept. The situation is not so clear for failure/effort attributions. It can also be said that each of these relationships will be larger when both the measure of self concept and the self-attribution scale are specific to academic settings.

2.11.4.2 Academic Achievement and Locus of Control/Causal Attributions:

Reviews of the locus of control literature (Bar-Tal and Bar-Zohar, 1977; Findley and Cooper, 1983; Lefcourt, 1976; Phares, 1976; Stipek and Weisz, 1981) have documented the theoretical expectation that there is a firm trend between locus of control and academic achievement. This trend, however, is not consistent and not without the 'occasional paradox' (Lefcourt, 1976, p.71). It seems to be more frequent and stronger for children than for adults (Phares, 1976), and it appears stronger when

grade-point average is used as an achievement measure than standardized tests. It generally appears that the more internal the individual's orientation, the higher his achievement.

A review of the relevant studies shows that researchers have utilized different scales in investigating the relation between academic achievement and locus of control. With respect to children, Bialer's Locus of Control Scale (Bialer, 1961), the Intellectual Achievement Responsibility Questionnaire (IAR, Crandall et al., 1965) and the Norwcki-Strickland Internal-External Control Scale (Norwicky and Strickland, 1973) have been most often used. As achievement measures, grade point averages and standardized achievement scores are usually used. It is important to note that the different measures used in the various studies probably contribute to the inconsistencies which appear in some of these studies. However, the fact that the relationship between academic achievement and locus of control is generally supported in studies in which different scales were used is an indication that this relationship is not instrument specific (Nowicki and Strickland, 1973). Early studies were generally criticized for serious methodological flaws, such as failure to control the effect of the IQ and failure to differentiate the total internal/external (I-E) score into its separate factors.

One of the early studies which pointed out to the existence of a relationship between locus of control and academic achievement, was the publication of the Coleman report (Coleman et al., 1966). Coleman and his colleagues found that among minority students, a sense of control over the environment was more strongly related to academic achievement than any other variable.

The first investigation to relate locus of control to achievement behaviour was reported by Crandall and his colleagues at the Fel's Institute (Crandall et al., 1962). The researchers tried to predict achievement behaviours as they were reflected in free play activities, the Stanford-Binet Intelligence Test, and The California Achievement Tests.

(*Thematic Apperception Test*)
The predictor measures included a TAT measure of need for achievement, a scale for assessing manifest anxiety, the child's personal statements regarding his concern for intellectual attainment, expectations of success, and the IAR. Of all the measures used,

the IAR proved to be the most strongly related to the time spent in intellectual free-play activities ($r = 0.70$, $p < 0.05$) and to the intensity of striving in these activities ($r = 0.66$, $p < 0.05$) among the boys. For the girls, there were no consistent correlations. In other words, for boys the attribution of responsibility was very important for predicting achievement behaviour, while for girls it was totally irrelevant. A similar pattern of sex differences emerged when performance on intelligence and achievement tests was correlated with the predictor variables. The IAR was significantly correlated to each test for the boys ($r = 0.38 - 0.52$) but totally uncorrelated for girls ($r = -0.03 - 0.13$).

In a latter study by the Fels group (Crandall et al., 1965) done with 3rd, 4th and 5th grade boys and girls, the IAR was found to be significantly related to reading, mathematics, language, and total achievement test scores from the IOWA Tests of Basic Skills. In addition, report card grades for this sample were associated with the IAR. In line with these findings, McGhee and Crandall (1968) found that students with high internal scores on the IAR achieved higher school grades than students with low scores (external orientation). Results consistent with those found by McGhee and Crandall were reported by Messer (1972). He also found that internally oriented subjects achieved higher school grades than those with an external orientation. In addition, he noted that the IAR was a better predictor of school grades than were standardized measures of school achievement. More interesting was Messer's finding that boys who assumed responsibility for success (I+) and girls who assumed responsibility for failures (I-) were the most likely to have obtained higher grades and achievement test scores.

Several reviews of the locus of control and achievement literature have been conducted in the past years. Phares (1976) examined studies testing the link between locus of control and achievement in children. Most of the studies reviewed by him used the IAR scale as a locus of control measure and grades or standardized test scores as indexes of academic achievement. He concluded that internal children showed superior academic performance, and this relation might be more substantial in children than in adults. Lefcourt (1976, 1982) drew conclusions similar to those of Phares. In addition, he

pointed out that the relationship between locus of control and academic achievement may be mediated by gender as well as by age.

Bar-Tal and Bar-Zohar (1977) reviewed 36 studies, including studies of both children and adults. Among these, they found only one study with a negative relationship between internal perception and academic achievement. Four studies did not show any significant relationships, and the other 31 showed a significant positive relationship between internal perception of locus of control and academic achievement. They concluded that there is a

"firm trend indicating that the perception of control is related to academic achievement" (p. 182).

Another review was done by Stipek and Weisz (1981) who investigated the relationship between children's control beliefs and achievement. They found that although most studies show significant correlations, nearly half of them fail to reach statistical significance and only a small portion are higher than 0.40. They note that when situational rather than dispositional designs are employed, the evidence points to a significant correlation between the two variables. In agreement with Lefcourt (1976) they point out that factors such as the characteristics of the questionnaires, the type of achievement measures used, and person variables (age, sex) appear to mediate the relation. Furthermore, they state that they found little evidence for the two commonly held beliefs:

- a) *That locus of control measures concerning only achievement situations are more highly correlated with achievement than are more general measures, and*
- b) *that the relationship between locus of control and achievement is stronger for boys than for girls* (p. 119).

They conclude that self-attributions are modestly related with achievement and the correlations are higher when ability attributions are considered as compared to effort. They also state that the relation between locus of control and achievement might be more complicated than earlier reviews had suggested, and they note that some assumed third-variable mediators had never been rigorously tested.

Finally, the most recent literature review was done by Findley and Cooper (1983). Their review included 98 studies with both children and adults. They reached the conclusion that internality and academic achievement are positively related, although the magnitude of this relation is small to medium (the average effect size across all studies was 0.18). They also examined the role of different mediators such as participant age, gender, race and the nature of the measures used. They found some support for Phare's (1976) initial conclusion that locus of control is more strongly related to academic achievement among children than among adults. However, their analysis suggested a curvilinear relationship, thus appearing that the relation tended to be stronger for adolescents than for adults or children. As regards gender, although a stronger effect was evident in studies using only male subjects than in studies using only females, they are careful not to state any definite conclusions; they rather seem to agree with Stipek and Weisz (1981) who suggested that gender differences might be explained by social desirability. Finally, they found that stronger effects were associated with specific locus of control measures (such as the IAR), and with standardized achievement or intelligence tests (as opposed to teacher grades). In their concluding remarks, they stress that although mediators serve to influence the strength of the relationship between locus of control and achievement, the evidence of the relationship is independent of such mediators. They also point out that causality cannot be determined from the studies reviewed.

All the above stated studies took place in United States and this raises the question of ethnic differences in moderator effect. Bar-Tal et al. (1980) report an extensive cross-cultural study conducted in Israel using a large (N=2438) sample of 9th grade students. They compared Jewish children of Asian-African descent and Jewish children of Euro-American descent. They state strong correlations between locus of control and achievement which were reduced but remained highly significant when the effects of SES were partialled out. The relationship between locus of control and achievement was significantly higher for the Asian-African than for the Euro-American students.

Several other studies have reported locus of control-achievement relationships in Britain, India, Nigeria, and Hungary (Dyal, 1984). Reid and Croucher (1980) administered Crandall's IAR scale to more than 1000 British schoolchildren. They found responsibility for success (I+) to be correlated with Vocabulary and achievement in mathematics (0.34 and 0.31 respectively); responsibility for failure (I-) had smaller but still reliable correlations (0.17 and 0.19). When they used a mean split to separate their sample into internals and externals, they found consistently higher correlations for the internals. The researchers stated that their results are quite consistent with the US data reported by Crandall and provide further validation of the IAR scale in the setting of the British junior schools.

Further evidence of the generalizability of the US data have been reported by Faustman and Mathews (1980), who found that high achievers are significantly more internal than low achievers in a large sample of Sri Lankan children. Similarly, Rupp and Nowicki (1978) working with a sample of 469 Hungarian children, 10-14 years old found that internals made significantly higher scores than externals on several measures of academic achievement (grade point average, language and mathematics).

The conclusion that can be safely drawn is that for White North American and Europeans there is a significant relation between locus of control and achievement, with internals showing superior academic performance as compared to externals. The same association seems to hold true for other cultural and ethnic groups as well.

Finally, it should be noted that although the correlation between school achievement and locus of control is frequently interpreted to mean that an internal locus of control affects school achievement, the evidence does not justify such a conclusion. Because the research is correlational and cross-sectional, it may well be, that children's school performance affects their perception of control or a third variable such as socioeconomic level or IQ could account for the relationship.

Several studies examined the relationship between locus of control and achievement with IQ partialled out (for example Messer, 1972). It was generally found that the significant relationship between locus of control and achievement remained even after

IQ was controlled. Calsyn (1973, cited in Stipek and Weisz, 1981) attempted a causal analysis between locus of control and achievement. He reanalyzed data from two large studies done by Sean and Bachman with a sample of 192 fourth grade children. The cross-lagged panel correlation analyses indicated that the total locus of control score, as well as the success and failure subscale scores, causally predominated over the verbal achievement in males; there was no such pattern of causal predominance for females. No systematic pattern of causal predominance between arithmetic achievement and locus of control emerged for either males or females. Stipek (1980) also performed a causal predominance analyses by using data from a sample of 89 first graders. Results of both path and cross-lagged panel correlational analyses suggested that locus of control caused achievement rather than the reverse. However, the results of these studies should be regarded with caution as further evidence is needed before any definite conclusions about the direction of the relationship could be reached.

Research also shows that individual differences in the way children attribute outcomes to such causes as ability, effort and luck are related to school achievement and academic behaviours (Bar-Tal, 1978; Marsh, Cairns et al. 1984). There is substantial amount of evidence indicating that the specific causal ascriptions used to explain success and failure outcomes, influence the individual's persistence, intensity and choice of behaviour of achievement tasks (Butkowsky and Willows, 1980; Diener and Dweck, 1978; Dweck, 1975; Weiner et al., 1972).

The attribution literature provides some evidence in support of the assumption that causal cognitions determine performance. But the findings do not discriminate between the direct effects of causal attributions per se, and the indirect effects mediated by emotion and expectancies elicited by the chosen cause. The theoretical explanation suggested by Weiner (1986) is that causal attributions have no direct effect on achievement behaviour, but rather an indirect influence via expectations and emotions which serve as mediators. Recent research has generally provided evidence in favour of this model (Weiner, 1986). However, a contrasting view emphasizing the role of

emotions, argues that causal attributions, expectations and emotions determine behaviour jointly (Overwalle, 1989).

Another issue relates to the question of whether single attributions, as opposed to causal dimensions, predominate in directing behaviour. According to Weiner (1986) psychological and behavioural reactions of attributions are mainly produced by the causal dimensions that underlie the ascribed cause. However, it is possible to conceive of distinct ascriptions as providing more specific and detailed information on the events and therefore having a greater impact on achievement outcome. Overwalle (1989) found that specific causes for success and failure were the critical determinants of performance at university level, as opposed to broad dimension categories.

2.11.4.3 Age Differences:

Research on the role of developmental factors in children's understanding of the various constructs related to locus of control and causal attributions has been based on a theoretical perspective which argues that development is characterized by progressive differentiation (Skinner, 1990). It has been reasoned that children's cognitive maturity and their limited information capacities would influence their understanding of the meaning of causal concepts, especially contingency versus noncontingency and effort versus ability and luck. Indeed empirical evidence shows that although children as young as fourth graders can use information to form causal judgements in the same way as the adults, they become more systematic and make finer discriminations as they get older (Frieze and Bar-Tal, 1980).

Two theoretical perspectives account for the development of the construct of perceived control and causal attributions, but they make diametrically opposed predictions. In addition, both have empirical evidence to support them. On the one hand, a Piagetian position predicts that perceptions of internal control decrease with increasing age. Piaget (1930) argued that young children tend to overestimate the extent to which they play a role in producing events. With increasing age, they come to recognize the

limitations of their efforts and abilities and this results in a decreased internality. Consistent with Piaget's position, there exists evidence indicating that the ability to recognize the uncontrollable nature of noncontingent events increases with age (Weisz, 1980).

On the other hand, most control theorists argue that perceived internality increases with age (Lefcourt, 1976; Nowicki and Strickland, 1973). Research on the locus of control position has yielded mixed results (Weisz and Stipek, 1982). Studies using locus of control scales like the Nowicki-Strickland (1973) have generally found linear increases in perceived internality with age during middle childhood, whereas studies using scales like the Intellectual Achievement Responsibility Questionnaire (IAR; Crandall et al. 1965) have reported no consistent developmental trends.

It seems, then, that empirical evidence shows both increases and decreases in perceived internality as well as no developmental change. Skinner and Chapman (1987) proposed that this paradox arises because of the different definitions of perceived internality used by the various researchers. Piaget was interested in perceived internality only, while most locus of control theorists define perceived internality relative to perceived externality and differ among themselves as to which internal and external causes they contrast. The researchers argue first that beliefs about the effectiveness of internal causes are not necessarily inversely related to beliefs about the effectiveness of external causes; hence perceived internality and externality should be assessed separately. Second, different patterns of age changes have been found in relation to the efficacy of certain internal causes such as ability or effort (Nicholls, 1978, 1984). Similarly different patterns of age changes have been found for beliefs about the role of powerful others, luck or unknown factors (Connell, 1985). The discrepancy in the findings may arise from the fact that different scales include different internal and external causes.

As already discussed empirical evidence shows that children's early conceptions of noncontingency, ability and luck are undifferentiated from their notions of effort. Young children, before the age of 8 or 9, seem to overestimate the efficacy of effort in producing success and preventing failure, and they seem to regard ability and luck as

involving the same contingency and control as effort. With increasing age children seem to adopt an increasing sense of responsibility for their outcomes in academic settings (Crandall et al. 1965; Frieze, 1980) and a growing sense of a link between outcomes and their own abilities and their expectations for the future. Parsons and Ruble (1977) demonstrated that while children generally become less optimistic with age, their expectations become more closely associated with their successes and failures. Taken together, these results show a picture of an early global and diffused view of causes as contingent and controllable. From this more differentiated causal categories develop: first contingent causes are distinguished from noncontingent ones, and then ability from effort.

Nicholls (1990) argues that young children lack not only a normative conception of ability but a normative conception of difficulty as well. He distinguishes three levels in the development of notions of difficulty. In the first level, the 'egocentric', 'difficulty' is purely self-referenced in that 'hard' means 'hard for me'. At the second level, children begin to recognize a continuum of levels of difficulty as demanding corresponding levels of ability. Nevertheless, they are still incapable to distinguish whether failure at a given task is due to low ability or high difficulty. It is only when they reach the third, the normative stage, that they are able to clearly differentiate between ability and difficulty.

More recent evidence about a gradual differentiation in children's control beliefs is provided by Skinner (1990). In a study with 7 to 12 year old children she factor analysed their beliefs about the effectiveness of five causes of school success and failure (effort, ability, powerful others, luck and unknown factors). She found that at ages 7-8, two dimensions were found, one marked by unknown and one by the remaining causes. At ages 9-10, three factors were present, marked by internal, external and unknown causes. By ages 11-12, four factors were present, effort, ability, external and unknown causes. She suggests that the different dimensions proposed by different theories of perceived control may be relevant to children's perceived control at different ages. For example as Connell (1985) has pointed out children's control beliefs

are organised around 'known' versus 'unknown' causes when they first begin school. As posited from a locus of control perspective, beliefs are organized around the dimensions of 'internal' versus 'external' when children are about 9 to 10 years old (Crandall et al. 1965; Nowicki and Strickland, 1973). Finally, at about 11 or 12 years of age beliefs are organized around beliefs centering on ability (Dweck, 1975; Nicholls, 1978).

It has been also suggested that age or grade level might serve to qualify the relation between locus of control and achievement (Lefcourt, 1976; Phares, 1976). Rotter (1975) hypothesized that a measure of generalized reinforcement has the greatest predictive power for behaviour in unfamiliar, novel situations. Consequently, a general measure of locus of control should be more highly related to younger rather than to older children's achievement because younger children have had less experience in achievement situations than the older ones. Similarly, Phares (1976) asserted that locus of control is more strongly related to academic achievement among children than among adults. There is some evidence for that. For example, Findley and Cooper (1983) found a curvilinear relationship between the two constructs; the correlation between academic achievement and locus of control was stronger for adolescents than for children or adults. In contrast, Stipek and Weisz (1981) concluded that for the most part no consistent age differences were found in the studies they reviewed.

2.11.4.4 Sex Differences:

It is commonly assumed that sex differences in locus of control are minimal for white North Americans. When cross-cultural studies are considered there is an overall trend for woman to be more external, but this effect varies considerably with the particular culture and sample characteristics (Dyal, 1984). Parsons and Schneider (1974) sampled eight different countries and found consistently higher external scores for the females. However, the effect was small, and t-tests of sex differences within countries were significant for Israel only. Similar findings are reported by McGinnies et al. (1974) in

their five nation study. The sex differences, though not statistically significant were in the direction of greater externality for females. In contrast, many other cross-cultural studies failed to obtain a reliable sex difference and still others have found that females are more internal (Dyal, 1984). It seems possible that there is an overall cross-cultural consistency for women to be more external but the evidence is not enough for a definite conclusion to be reached.

It has also been claimed by some researchers that there is a sex linked difference in the relationship between locus and control and achievement. Nowicki and his colleagues (Nowicki and Strickland, 1973) claim that the relation between internal locus of control and achievement is stronger for boys than for girls. Stipek and Weisz (1981) in their review found support for this belief in studies where the Children's Nowicki-Strickland Internal-External Control Scale (CNSIE) was used. They reason that this stronger relationship might be the result of social desirability. Findley and Cooper (1983) also found that the relation between the two constructs appears stronger in studies using only males than in studies using only females. Not all investigators have found these sex differences, however. Messer (1972) reports that in his study, achievement was positively related to acceptance of responsibility for success (I+) in boys and acceptance of responsibility for failure in girls (I-).

In relation to causal attributions, it seems that males and females adopt different attributional patterns to explain their successes and failures. One of the differences which most clearly emerges in the literature is the highly consistent finding that females of all ages have lower initial expectations of success than males. Beginning at preschool age, girls seem to underestimate their performance, while boys overestimate it (Frieze, 1980). Low initial expectations can create a self-fulfilling prophecy since they lead to perpetuating causal attributions. Direct evidence for this is seen in studies indicating that females of all ages are more likely than males to attribute their successes to unstable, external causes such as luck and attribute their failures to lack of ability (Dweck and Reppucci, 1973; Nicholls, 1975, 1979). Accordingly the girls' self-evaluation appears less positive, their effort and persistence on the tasks drops off, and performance

deteriorates. Boys, in spite of their poorer grades, and the greater criticism that they receive, seem to respond quite differently to failure feedback from adults. They tend to attribute it to controllable or variable factors. In line with this, they tend to confront failure with improved performance or increased persistence. They have also been found to credit success to their abilities more readily than girls (Nicholls, 1975).

Crandall (1969), in an investigation of 7 to 12-year-olds, found that girls had lower success expectations than boys, a finding which is consistent with the attributional hypothesis that negative attributions of ability lead to lowered achievement expectations. Löchel (1983) by reviewing sex differences in achievement, also found that females are more inclined to take responsibility for failure.

The finding that females tend to adopt a helpless attributional style (attribute success to external factors and failure to a lack of ability) seem to be in contrast with the fact that girls are far more successful than boys during the primary school years. In addition, they receive less criticism from teachers on skills, motivation and personal conduct (Coopersmith, 1967). Some argue that this differential response to failure stems from the different socialization histories of males and females. Boys, it is said, have been trained to be independent and to formulate their own standards of excellence against which to judge the adequacy of their performance. Hence, when they receive negative feedback from an adult, they can accept or reject it depending on how it matches their own assessment. Girls, on the other hand, are believed not to develop independent standards and therefore to remain more dependent upon external evaluation.

Another explanation hinges on the different feedback that girls and boys receive from significant adults in their environment and particularly teachers. It seems that adults tend to give negative feedback to males for a variety of reasons: their classroom behaviour, their dress, their lack of effort as well as for intellectual failure. Females, on the other hand, seem to receive negative feedback predominantly for the intellectual quality of their work. Past research has shown that feedback used in a nonspecific manner to refer to a wide variety on nonintellectual behaviours comes to lose its meaning as an assessment of the intellectual quality of the child's work. Thus, boys

come to disregard the negative feedback because it is so diffused, while girls come to regard it highly because it is so specific. In support of this hypothesis, Dweck and Goetz (1978) found that 45.6% of the feedback that boys received in class referred to intellectually irrelevant aspects of their performance. In sharp contrast, for girls the vast majority (88.2%) of the relatively little feedback they received for their work referred specifically to its intellectual aspects. Thus, it seems that the two sexes differ in the degree to which negative feedback serves as a valid indicator of the intellectual ability displayed in their academic performance. The results for positive feedback, although not as striking, were essentially the opposite. For work-related praise, 93.8% was contingent upon the intellectual quality of work for boys, but only 80.9% for girls, suggesting that positive evaluation for boys may be more indicative of competence than it is for girls. These feedback patterns may, then, serve to influence directly the attributions that children use to explain their successes and failures in academic settings. However, not all studies support the finding that females seem to hold a helpless attributional style. Beck (1977) found no sex difference in either internality or lack of effort attributions. Similarly, Diener and Dweck (1978) did not report a significant sex difference on either lack of effort or internality for failure. Still other studies found that females are more inclined to take responsibility for success than for failure (Boss and Taylor, 1989). It seems, then, that at the present state of research no definite conclusions can be reached, although the bulk of evidence points out that males rather than females tend to use a favourable attributional style.

2.11.4.5 Locus of Control and Learning Disabilities:

In light of the positive correlation between an internal locus of control and academic achievement as has been documented in the literature, it would seem logical to assume that underachieving and learning disabled children would exhibit a more external locus of control than average achieving children. It has been also proposed that learning

disabled children do not follow the typical developmental trend towards greater internality observed in nondisabled children.

Kifer (1975) reported that successful students in grades 2, 4, 6 and 8 tended to indicate more internal control perceptions than unsuccessful students. He also found a trend toward greater internality for successful students as a function of increasing grade level, whereas unsuccessful students remained relatively external in their orientation across all grade levels.

Similar conclusions were reached by Chapman and Boersma (1979) who studied 81 learning disabled and 81 normally achieving children in grades 3-6. By using a short form of IAR to assess locus of control, they found that learning disabled children indicated more external perceptions of control with respect to successes. This external orientation seemed well established in grade 3 and remained consistent through to grade 6. On the other hand, for failure outcomes there was no difference between the two groups. They also found that when internality did develop with the learning disabled group it was internality for successes and not for failures.

Dudley-Marling, Snider and Tarver (1982) who reviewed seven studies done with learning disabled children and adolescents, found that in six of them, LD children were more external as compared to average achieving peers. In particular, learning disabled children have been found to be more likely than their normally achieving peers to attribute their successes, but not their failures, to external factors.

Several other researchers report that learning disabled children are more external in their control orientation than their normally achieving peers. Fincham and Barling (1978) using the Nowicki-Strickland locus of control scale, compared learning disabled, regular and gifted children. They found that learning disabled children made more attributions to external factors than did the regular or the gifted. Pearl et al. (1980) compared the scores of 77 boys and girls in grades 3 to 8 who met federal criteria for learning disabled classification but who had not been identified, with a group of non-learning disabled controls. They found that groups differed in acceptance of

responsibility for success but not for failure, with LD children showing lower perceptions of internal control over success.

Rogers and Saklofske (1985) studied both general and academic locus of control beliefs among 45 learning disabled and 45 normally achieving children aged 7-12 years. Academic locus of control was measured by the Intellectual Achievement Responsibility Questionnaire (IAR; Crandall et al., 1965) and general locus of control by the Nowicki-Strickland locus of control scale. They found that LD children were more external as compared to control group on both measures. They also found that LD children took significantly less responsibility for both their academic successes (I+) and failures (I-).

Lewis and Lawrence-Patterson (1989) also compared learning disabled children with their normally achieving peers using the IAR. The subjects were all males between 8 and 12 years old. They found significant differences between the two groups with normally achieving children obtaining significantly higher scores (internality) for total locus of control and for success experiences. No differences between groups were found for failure events.

In all the above reported studies children with learning disabilities were found to be more external, that is, they accepted less personal responsibility, than nondisabled children of comparable age especially with regard to attributions for success.

2.11.4.6 Attributions of Learning Disabled Children :

There is some evidence that cumulative experiences in achievement settings would lead children to make generalizations about the causes of outcomes (Dweck and Reppucci, 1973; Dweck et al., 1978; Nicholls, 1975). The fact that learning disabled children have experienced repeated failure leads to the hypothesis that they are more likely than their peers to attribute their difficulties to insufficient ability (Pearl, 1982; Pearl et al. 1980). Further, there is considerable evidence that children who view their difficulties as stemming from insufficient ability are more likely to show decreased persistence and

deterioration of performance when faced with difficulty than children who attribute their failures to insufficient effort (Diener and Dweck, 1978; Dweck, 1975; Weiner, 1979).

Stipek and Hoffman (1980) found that low-achieving boys in first and third grades were more likely to attribute failure to lack of ability than were high achieving boys.

In the second phase of the study referred to in section 2.10.4.5, Pearl, Bryan and Donahue (1980) examined underachieving and control children's causal attributions to determine if they believed that the factors of ability, effort, task difficulty and luck influenced their success and failure. No differences were found between the two groups in ability or luck attributions, but there was a significant difference in effort attributions. The underachievers were less likely to believe that their failures were the result of a lack of effort. Moreover, the belief was held not only for failures in the area in which children experienced difficulty, but in other domains as well. And although there was a developmental trend evident for both groups, towards increasingly considering lack of effort to be a cause of their failures, at each grade level underachieving children were less likely than their classmates to believe that lack of effort was an important reason for their failures.

Pearl (1982) replicated the study by Pearl et al. (1980) with a formally labeled group of third and fourth graders. The results from this study show the same pattern as in the previous one. LD children did not believe in the same degree as their normally achieving peers that their failures were due to a lack of effort; they considered luck more of a factor in their successes and bad luck less of a factor in their failures. LD children in both grades considered that their successes were caused less by their ability than did non-LD children. A difference between the results of the two studies was that the LD children in Pearl's (1982) study attributed failures less to a lack of effort than control children, only for failures in reading and on puzzles, but not their social failures as well. Pearl reasons that maybe the label 'learning disabled' allows children to limit their negative self evaluations to their performance in achievement-related activities.

The results of Palmer et al.'s (1982) study show similar ability attributions of LD and non-LD children in successes, but in failure, LD children were more likely to ascribe

ability as a cause than were the non-LD children. They also found that although both LD and non-LD children saw lack of effort as responsible for failures, both saw effort as more responsible for their successes than for their failures.

Jacobsen et al. (1986) in a study with 7th and 8th grade students, found that LD children were similar to the control group in ascribing internal causes for success; for failure outcomes, LD children used lack of effort and lack of ability explanations more than non-LD peers. The researchers point out that their results do not fit the definition of helpless given to LD children by some researchers (Dweck, 1975). Although the LD group presented a less positive attributional style, this might be the result of their experiencing more objective failure than their normally achieving peers.

Light et al. (1985) examined the causal attributions of boys and girls in 38 learning disabled and normally achieving children with respect to their tendency to attribute their difficulties to insufficient effort, insufficient ability and external factors. In agreement with Pearl (1982) and Pearl et al. (1980), they found that LD children were significantly less likely to attribute their failure to insufficient effort; however, the degree to which LD children favoured attribution to external factors versus insufficient ability varied according to the sex of the child. Consistent with other research findings, LD girls were significantly more likely than non-LD girls to attribute their failures to insufficient ability, whereas LD boys were significantly more likely than non-LD boys to attribute their failures to external factors. Consistent with their attributions LD girls but not LD boys, were less persistent than their non-LD peers. This finding suggests that LD girls may be more vulnerable to the debilitating effects of failure, and that sex is one of the factors that may interact with a history of learning difficulties to produce less effort and persistence on achievement tasks.

In contrast to these studies, Cooley and Ayres (1988) found no significant differences between the attributions of LD and non-LD children. The LD group was more likely to attribute failure as being due to stable, ability cause, but this difference barely approached significance.

In summary, although results appear inconsistent, many studies (Jacobsen et al., 1986; Light et al., 1985; Palmer et al., 1982; Pearl, 1982) report attributional differences between LD children and normally achieving peers. The main pattern seems to be that LD children appear to accept responsibility for failure, but not for success. Moreover, they appear to explain failure outcomes as caused by insufficient ability. This in turn triggers negative affect and lowered success expectancies, factors which are considered to influence subsequent achievement performance.

2.12 A synthesis of the research and the theoretical model of this study:

In the previous sections various aspects pertaining to self-concept and perceived control literature were covered, with special reference to the educational domain and the presumed interaction between academic self-concept, academic locus of control and school achievement. In this section a synthesis will be attempted of some of these theoretical ideas into the scheme which formed the basis of the present research and from which the hypotheses of the study were derived.

The theoretical model presented here is derived from the various parts of the literature pertaining to self-concept, locus of control and causal attributions. It is intended to illustrate the assumed relationships between actual outcomes of school performance (grades), self-concept and control beliefs. The theoretical scheme is based on the study of school related perceptions of competence (e.g. Harter, 1982); the relation of the child's sense of competence to his perceived control over successes and failures (Crandall et al., 1965; Connell, 1985); and the study of child's attributions for achievement outcomes (Nicholls, 1984, Weiner, 1986). All these different theories, however, have a common focus: children's cognitions regarding academic outcomes. In other words, perception of competence, locus of control and causal attributions involve children's perceived capacities (or incapacities) to produce outcomes (perceived

competence) and their understanding of the causes of outcomes (locus of control/causal attributions).

Self-concept is assumed to involve the individual's description of himself and to contain cognitive, behavioural and affective components. It is assumed that this description is influenced by the way others see him; that it is relatively consistent over time and place and it is related to relatively consistent experience and behaviour; it is further assumed that it acts as a motivating and organizing aspect in an individual's behaviour (Burns, 1982). Self-esteem is thought to involve an affective evaluation of one's self, generally assessed in terms of positive or negative traits. Self-esteem, then, is seen as the evaluative component of the broader representation of self, the self-concept, which is considered a more inclusive construct than self-esteem (Burns, 1986). Cognitions about self-concept may or may not influence self-esteem depending on their centrality and their importance. It should be noted that the terms self-esteem and global self-worth are used interchangeably in this work with no further differentiation between them.

An important feature of the current theoretical approaches to self-concept is the distinction between the different aspects of the self that relate to different areas of experience. In line with these approaches the assumption is made here that self-concept is a multidimensional construct having a general facet (global self-esteem) and more specific academic facets. It is further assumed that these self-concepts are of varying degree of generality and are hierarchically organized. The child is thought to develop self-evaluations about specific school-subjects which are directly influenced by performance levels. However, we do not imply that absolute levels of performance would directly influence self-concept levels so that high performance in a subject would result in high self-concept and low performance in low self-concept. It is thought that the child's perception of his competence is particularly important in influencing self-concept levels (Bandura, 1977; Harter, 1983a; Markus and Nurius, 1984; Nicholls, 1982), as research shows that erroneous inferences of incompetence are linked to underachievement (Dweck, 1975; Weisz, 1981), the adoption of lower expectancies of

success (Phillips, 1984), depression (Alloy and Abramson, 1982) and personal helplessness (Abramson et al., 1978).

It was expected that the social context within which the child finds himself with its various sources of information such as feedback from teachers, comments from parents and social comparison with peers would mediate the influence of performance on self-concept levels. It was also reasoned that the children of this study, would make more use of social comparison processes in forming academic self-concept, not only because of the age range of the sample but because of the organisation of the Greek classroom and the uniformity of instruction which would further favour their use.

The specific self-evaluations are, then, thought to generalize to evaluations about general competence and merge into the formation of a general academic self-concept. Once formed, self-concept is thought to be used as a kind of self-theory to derive hypotheses about future performance (Brim, 1976; Epstein, 1973). Children who do well at school would form a positive academic self-concept which in turn would influence future academic performance. On the other hand, children with a history of academic underachievement would possess less positive academic self-concepts compared with their normally achieving peers. This would in turn contribute to lowered expectations for future success, reduced achievement efforts and probably further failure.

It is thought that performance in specific subjects would directly influence corresponding subject specific self-concepts and only indirectly global self-esteem. The degree to which global feelings of self-worth would be influenced by academic success and failure is thought to depend on child's self-values and the "centrality" of the specific components (Rosenberg, 1982). As the child progresses through primary school the academic self-concept would come to acquire a particular valence (degree of importance). If the valence is low, then the child will tend to reject school and all that it stands for and seek self-worth elsewhere. If the valence is high, perhaps due to the high importance placed upon academic success by his family and social milieu, then the child's reaction will depend upon the value attached to it. If the value is a positive one,

then the child is likely to develop adaptive working strategies. If the value is a negative one, then he is likely to develop defensive strategies in order to defend his self-worth and he might try to obtain feelings of self-worth from elsewhere. A child, for example may evaluate himself negatively in Mathematics; but this negative evaluation will not influence his global self-esteem unless the child values Mathematics highly relatively to other academic and non-academic activities.

Although in today's highly complex and sophisticated Western societies a certain freedom is afforded in the selection of self-values, this selection is not without limits. The values of the immediate and the wider environment would certainly exercise a great influence on the individual's selection. And as academic achievement is greatly valued by schools and society alike and represents the major realm of achievement for the age group which constitutes the present sample, it is thought to constitute a central component to the child's global feeling of self-worth. This implies that although school achievement is not considered the only source of global self-esteem, and it is not equally important for all children, it is nevertheless one of the most important sources of a global sense of worth.

It is thought that due to the great emphasis placed on academic achievement within the Greek culture, academic self-concept would be centrally placed in the child's total self-perceptions, for the sample of this study, and therefore it would constitute a continuing source of potential self-worth. If school success is considered so important, it would be hard for failing students to adopt an attitude of devaluating school as a kind of defense against failure and seek to obtain feelings of self-worth from elsewhere.

Academic self-concept and global self-worth are thought to be clearly differentiated and children of eight years and older are considered able to make discrete judgements about their competence in different domains, but they are also considered as having a view of general self-worth over and above these specific judgements (Harter, 1982; Marsh, Craven and Debus, 1991; Shavelson et al., 1976).

It was further assumed that the global self-esteem does not represent merely an addition of domain specific judgements but it is a global judgement of one's overall worth. This

was thought to evolve through the dynamic interaction of what one wants to be (ideal self) and what one thinks he is and through the internalization of the reflected appraisals of significant others.

Children in middle childhood years were chosen as the sample of this study because this period is considered particularly important for shaping academic self-concept. According to Erikson (1968) this is the period marked by children's efforts to maintain a sense of industry while struggling with feelings of inferiority. One important area in which this struggle takes place is the school. It is assumed that when children enter school they have already formed a picture of themselves based on their previous experiences; but the primary school years are considered particularly important in shaping academic self-concept. Success in learning is a critical task during middle childhood years and such success will contribute to the development of a positive academic self-concept and will reinforce the child's global self-worth, which are basic features of emotional well-being (Harter, 1978).

Research shows (Bridgeman and Shipman, 1978) that the great majority of children enter school with a mainly positive self-concept. This initial level of self-concept is thought to play a determining role as far as school success and failure is concerned. As school successes and failures begin to accumulate, an academic self-concept begins to emerge, with more specific divisions relating to particular school subjects. As a result of this gradual differentiation the child is thought to form an image of himself as having varying degrees of abilities in different subjects and at the same time to come gradually to see himself as bad or good in school generally. It is therefore thought that a general academic self-concept is a different kind of construct than the more specific constructs in various subjects. It is also maintained that by third grade, academic self-concept has been stabilized as a result of the child's academic experiences.

Initially the self-concept is considered as operating as both cause and effect in respect to academic achievement. The causal role would be played primarily by the child's level of global self-esteem. During the early school years, the academic self-concept is assumed to undergo a process of shaping and reshaping dominated by the influence of academic

experience. It is expected, then, that during primary school years academic achievement would have causal predominance over academic self-concept (West et al., 1980).

Self-concept is considered not only the product of one's experience but also as a mediator in the interpretation of new events. It is thought to influence the way individuals categorize information and interpret the outcome of the performance situation. It is generally accepted that self-esteem may mediate causal attributions in two ways, either by displaying attributions that enhance self-esteem -self-enhancement-, or by displaying attributions consistent with current levels of self-esteem -self-consistency- (Fitch, 1970). In either case, it is expected that children with different achievement histories and, as a consequence of that, different levels of self-concept, would adopt different attributional styles in explaining achievement events, particularly in reference to ability.

It is thought that the child who experiences success within a responsive and reinforcing environment would have a high self-esteem and would take full responsibility for his successes by attributing them to internal factors (such as ability or effort), while the child whose early academic experiences are frustrating will be more apt to hold a low self-concept and would tend to attribute success to factors outside his control (such as significant others). The opposite pattern is expected to hold true in relation to failures (Harter, 1983).

Based on attribution theory claims (Weiner, 1974, 1979) that high performance levels would be attributed to ability and therefore result in high self-concept if success has occurred in the past, it was hypothesized that one's history of academic success and failure would have a great influence on the formation of self-related constructs. Research has established that attributing academic failure to an internal, invariant source of poor ability has been significantly associated with an expectancy of non-control and poor achievement. Children who believe that doing well at school is contingent on their own actions perform better than those who do not (Seligman, 1975). Similarly, children who believe that success is caused by internal and controllable causes (like effort, Weiner, 1979), who believe that they can produce the responses that lead to

desired outcomes (Bandura, 1977), or who believe that they possess high ability (Harter, 1986; Stipek, 1980) perform better academically. It was expected, therefore, that children with a history of underachievement would be more prone to the adverse effects of experiencing that academic successes and failures are beyond their control.

It was also hypothesized that special class placement with the process of sorting and labeling would have a significant influence on the self constructs. Children attending special classes would appear particularly vulnerable to the adverse effects of all sorts of negative influences, such as self-fulfilling prophecies (Rosenthal and Jacobsen, 1968), teachers' judgements of them as being less capable than their peers and their holding lower academic expectations for them. As a result, it was thought that Special Class children might be more likely to adopt a 'helpless' attitude and thus be inclined to explain failures as indicative of insufficient abilities, whereas explain success whenever it occurs as resulting from external factors. Therefore it was hypothesized that special class placement would make an independent contribution to children's self-concept and control beliefs.

These self-related perceptions of control were, then, assumed to have important consequences for one's motivational and cognitive reactions, thus influencing subsequent achievement behaviour.

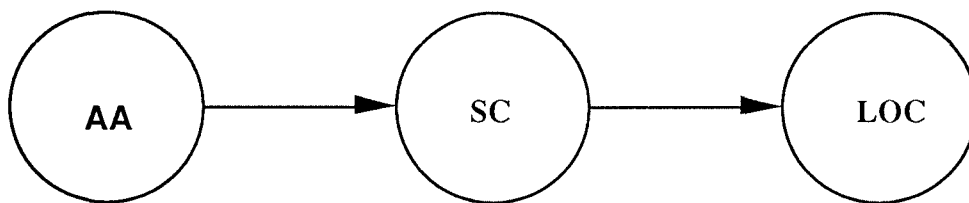
Although a host of attributions have been reported to be used by subjects to explain their academic achievement, ability, effort and external factors were found to be the most dominant achievement related attributions (Weiner, 1979). These attributions, then, were chosen to be tested in this study.

The theoretical model adopted in this study to explain the relations between academic achievement, self-concept and locus of control points out to a direction from school achievement to self-concept to perceived control beliefs (Figure 4). The basic rationale underlying our model to explain how children acquire an academic self-concept assumes that the academic self-concept is an outcome of schooling. This model is based on empirical evidence which suggests that for the middle childhood children actual achievement predicts perceived academic self-concept (Caslyn and Kenny, 1977;

Connell, 1981; Eccles, 1983; Harter and Connell, 1984). Nevertheless, we are aware of the fact that different relations among the constructs of interest may hold true for accurate versus inaccurate raters of self-concept and also for children in different levels of ability (Harter and Connell, 1984).

Figure 4

A Diagram Illustrating the Causal Ordering of the Three Variables.



AA = Academic Achievement

SC = Self-Concept

LOC = Locus of Control

Although the model tested is unidirectional, it is accepted that these relations are inherently bidirectional and a cyclicity exists between the three constructs. That is, children with a history of success, are thought to form positive self-concepts and come to believe that they can exert control over academic performances. These beliefs will subsequently generate future performances that would further enhance self-esteem levels, and strengthen their beliefs about the controllability of outcomes. Conversely, children faced with failure would be expected to form negative self-concepts and perceive themselves as having no control over academic outcomes. These beliefs would, in turn, influence their effort, motivation and coping strategies, which would result in lower levels of actual performance and serve to further depress self-related beliefs.

Despite the fact that self-concept and control beliefs are treated as the dependent variables in the model, there is no empirical justification for this. A case can be made for any one of the constructs under study being the primary cause of the others. It is thought, however, that as argued above, for children in primary school, self-concept

would reflect levels of academic performance rather than determine it. From that time on, the interplay between academic self-concept and achievement is probably reciprocal (Bryne, 1986), with academic self-concept being both a 'cause' and 'effect' of achievement.

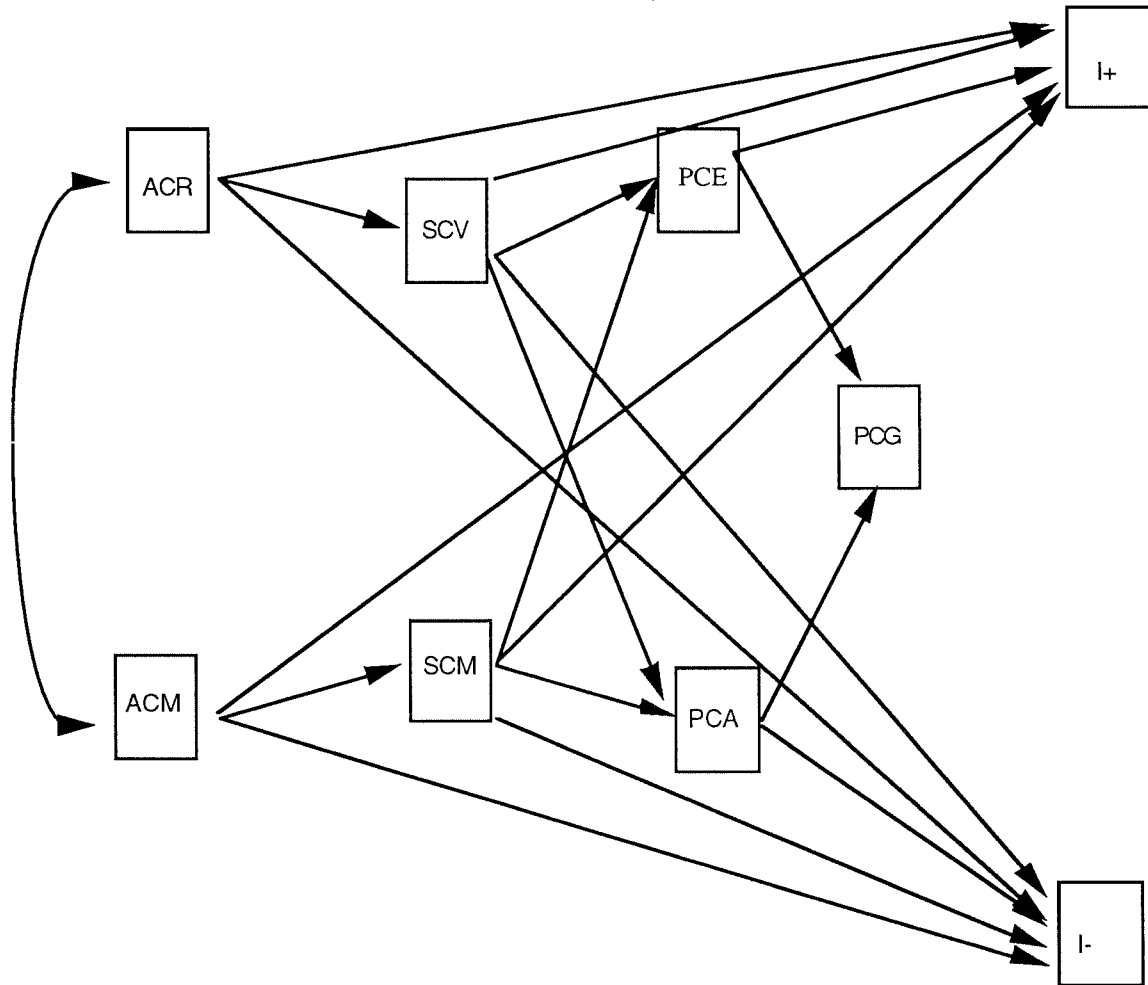
The model tested by means of path analysis is presented in Figure 5. First, it is postulated that academic achievement is at the beginning of the causal chain, and therefore, the position is taken that academic achievement takes precedence over both self-concept and locus of control. More particularly it is hypothesized that actual achievement has substantial positive effects on the development of subject-specific academic self-concepts and that it is mainly through classroom grades that this influence takes place (Bachman and O'Malley, 1986; Chapman and Lambourne, 1990). High achievement is thought to contribute to a positive self-concept because children who are academically successful relatively to their classmates, will absorb such evaluations into their emergent sense of academic self-concept. In line with relevant findings, it was further anticipated that success in each domain would predict the academic self-concept in that particular domain. For example, achievement in Maths would predicts Maths self-concept rather than Verbal self-concept.

In turn, both achievement and self-concept levels were considered to influence the child's perception of control. Success in academic achievement was thought to lead to enhanced evaluations of self-competence and an increased sense of personal control. On the other hand, continuous failure was thought to result in negative self-evaluations and feelings of having little control over academic achievements.

Critical to the model is the assumption that both self-concept and locus of control are domain specific rather than global. Thus, within the chosen domain of school learning the focus was on academic self-concept and academic locus of control.

Figure 5

A Theoretical Model Intended to Illustrate the Assumed Relationships between Academic Achievement, Self-Concept and Control Beliefs.



2.13 Hypotheses:

The main focus of this study was the investigation of any differences in self-concept, locus of control and causal attributions occurring between two groups of children comprising the sample of this investigation, that is, Regular (RC) and Special Class (SC) children. Therefore, a set of initial hypotheses were set up but these were modified after data were reviewed and a decision was made to split the Regular Class into two groups, Normally (NA) and Low (LA) achieving children.

The first set of hypotheses refers to differences between the groups in terms of the three constructs of interest. This is followed by a second set of hypotheses referring to the relations between the different variables, and finally the hypotheses in respect of age and sex differences are presented.

2.13.1 Differences between groups:

Studies on general self-concept with failure prone children have produced ambiguous findings. Because general self concept taps a broader range of feelings and attitudes than just school related factors, it seems possible that general self concept will not necessarily be affected by academic failure. Therefore, it was predicted that

1a. There will be no significant differences on global self worth scores between the two groups (*SC and RC*).

1b. There will be no significant differences on global self worth scores between the three groups (*SC, LA and NA*).

In terms of academic self-concept, it seems likely that persistent failure experiences will lead to the development of beliefs in some children that they have lower abilities than others and this might lead to a lowered sense of competence. Therefore underachieving children are expected to hold lower academic self-concepts compared to their normally achieving peers. Moreover, identifying children as needing special help and placing them in special classes might further diminish their academic self-concept. In view of these it was predicted that

2a. Special Class (SC) children will be significantly different from the Regular Class (RC) group on measures of academic self-concept, holding more negative academic self-concepts as compared to RC group.

2b. Special Class (SC) and Low Achieving (LA) children will be significantly different from the Normally Achieving (NA) group on

measures of academic self-concept, holding more negative academic self-concepts as compared to NA group.

3. Special Class (SC) children will differ significantly on academic self-concept measures from the Low Achieving (LA) group, having lower academic self-concepts as compared to them.

In light of the view that lower self perceptions of academic competence might be accompanied by beliefs that when success does occur, it would be thought as caused by external causes rather than by one's abilities whereas failure events would be more likely considered as being a function of one's inadequate abilities it is hypothesized that children in the three groups will differ in their degree on internality and will use different ability/effort explanations to account for success and failure events. Therefore it was hypothesized that

4a. Special Class (SC) children will obtain lower total scores on the IAR, as compared to Regular Class children (RC), thus being more external.

4b. Special Class (SC) and Low Achieving (LA) children will obtain lower total scores on the IAR, as compared to Normally Achieving children (NA), thus being more external.

5a. Special Class (SC) children will obtain lower scores on the Responsibility for Successes Scale (I+) than Regular Class (RC) peers, thus ascribing successes to external factors.

5b. Special Class (SC) and Low Achieving (LA) children will obtain lower scores on the Responsibility for Successes Scale (I+) than Normally Achieving peers (NA), thus ascribing successes to external factors.

6a. Special Class (SC) children will obtain higher scores on the Responsibility for Failures (I-) Scale than Regular Class (RC) children, thus attributing their failures to themselves.

6b. Special Class (SC) and Low achieving (LA) children will obtain higher scores on the Responsibility for Failures (I-) Scale than Normally Achieving children, thus attributing their failures to themselves.

6c. There will be no differences between the SC and LA groups in relation to Responsibility for Failures (I-) scores.

In light of the empirical evidence suggesting that high achievers tend to ascribe their successes to internal, stable factors, and their failures to external, variable factors, while the opposite pattern holds true for failure prone children, it was hypothesized that

7a. Special Class (SC) children will obtain lower scores on I+A (success/ability) subscale as compared to Regular Class (RC) group, thus being inclined not to ascribe their successes to their ability.

7b. Special Class (SC) and Low Achieving (LA) children will obtain lower scores on I+A (success/ability) subscale as compared to Normally Achieving (NA) group, thus being inclined not to ascribe their successes to their ability.

8a. Special Class (SC) children will obtain higher scores on I-A (failure/ability) subscale compared to Regular Class (RC) group, thus attributing their failures to their lack of ability.

8b. Special Class (SC) and Low Achieving (LA) children will obtain higher scores on I-A (failure/ability) subscale compared to Normally Achieving group (NA), thus attributing their failures to their lack of ability.

9a. There will be no differences between the two groups ^(SC and RC) in terms of scores measuring success/effort (I+E) and failure/effort (I-E) self-attributions.

9b. There will be no differences between the three groups in terms of scores measuring success/effort (I+E) and failure/effort (I-E) self-attributions.

2.13.2 Relations among variables:

On the basis of significant positive correlations found in several studies between academic self-concept and achievement measures and the findings that academic self-concept in specific academic areas is most highly correlated with corresponding marks in these areas, it was predicted that

10. Academic self-concepts (SDQR, SDQM, PCE and PCA) will be significantly and positively correlated with Verbal and Math achievement.

11. Verbal and Math Achievement will be more highly correlated with self-concept in the matching content areas (SDQR and SDQM), and less correlated with general academic self-concepts (PCE and PCA).

The findings reported in the literature concerning the relations between global self-esteem and various measures of academic performance are not unequivocal, therefore, it was expected that

12. Verbal and Maths Achievement will be uncorrelated with global self-esteem.

Given the heavy emphasis applied on academic achievement, by Greek parents and teachers alike, and its consideration as a road to success and a source of family happiness (Georgiou-Nilsen, 1981), it was assumed that academic self-concept would be an important index of general self-worth. Therefore, it was predicted that

13. Academic self-concepts will be significantly correlated with global self-esteem in all groups.

In terms of locus of control, because IAR measures attributions to academic situations, responses to the IAR were expected to correlate more strongly with academic self-concept than with global self-esteem. Therefore, it was predicted that

14. The attribution/self-concept correlations would be content specific so that academic self-concepts would be significantly correlated with academic attributions whereas global self-esteem would be relatively uncorrelated.

Also on the basis of findings supporting a self-serving bias in people's attributions, it was predicted that

15. Achievement measures would be substantially correlated to IAR total and the success subscales (I+, I+E, I+A) scores and less substantially correlated to failure subscales (I-, I-E, I-A).

In the self-concept literature it is generally proposed that the tendency to internalise responsibility is positively correlated with self-concept (e.g. Burns, 1979). Marsh (Marsh, Smith and Barnes, 1983; Marsh, Relich and Smith, 1983) proposed that this holds true for successes only as a favourable self-concept is consistent with attributions to ability and effort as perceived causes of success, but not with a disposition to attribute failure to a lack of effort and particularly not a lack of ability. Brown and Weiner, (1984) found that self-concept was substantially correlated with success/ability, success/effort and failure/ability attributions, but not with failure/effort. The self-worth theory (Covington and Omelich, 1979a, 1979b, 1979c; Covington, 1984) makes similar claims. Generally most researchers seem to agree that a disposition to attribute success to internal causes will be positively correlated with self-concept, some of them pointing out that the relationship is stronger for success/ability attributions than success/effort. They also seem to agree that the disposition to attribute failure to ability will be negatively correlated with self-concept. The predictions for failure/effort attributions are not so clear. On the basis of the above the following set of

hypotheses were made as regards the relationships that are hypothesized to exist between self-concept, self-attributions and achievement.

16. For success outcomes, academic self-concept would be substantially and positively correlated with both ability and effort attributions.

17. For failure outcomes, academic self-concept would be negatively correlated with ability attributions and less negatively correlated with effort attributions.

2.13.3. Age and sex differences:

Although age and sex differences were not the primary focus of this study it was considered worth-while investigating possible developmental trends and sex differences in self concept and locus of control.

In light of the inconclusive evidence as regards sex differences on global self-esteem and general academic self-concept scores, it was predicted that

18. There will be no sex differences on global self-esteem (PCG).

19. There will be no sex differences on general academic self-concepts (PCE and PCA).

However, boys and girls have been found to differ on measures of subject specific academic self-concepts. In the light of the above it was hypothesized that

20. There will be significant differences between sexes on Verbal and Maths self-concepts (SDQR and SDQM).

In light of the inconclusive evidence concerning sex differences on locus of control it was predicted that

21. There would be no sex differences on total IAR and subscale scores.

On the basis of previous findings on adults and children showing the influence of sex role stereotypes which ascribe higher competence to males and a self-derogatory bias to females (Nicholls, 1975) it was predicted that

22. There will be sex differences in the causal attributions for success and failure. The direction of these differences will favour a self-enhancement pattern in boys but not in girls.

In relation to age differences some studies suggest a decline during the middle childhood years (Marsh et al., 1984) while others indicate that global self-esteem remains stable during this time (Larned and Muller, 1979). In terms of academic self-concept, it has been suggested that underachieving children's self-perceptions become more negative over time as a result of accumulating failure experiences and more sophisticated cognitive-developmental skills which enable them to increasingly use social comparison information as a method for evaluating themselves. Therefore it is predicted that

23. There would be no age differences on global self-esteem.

24. There would be a decreasing linear trend in Special Class (SC) and Low Achieving (LA) children's' scores on academic self-concept measures.

On measures of locus of control a developmental trend toward internality has been found in several studies. Therefore it is hypothesized that

25. There would be an increasing linear trend in IAR and subscale scores in all groups.

Chapter 3: Methodology:

3.1 Overview:

This chapter deals with the methodological issues of the study. The first section starts with a discussion of some of the assessment problems inherent in the measurement of self-referent constructs- self-concept and locus of control. This is followed by a description of the sample, a brief discussion of testing procedures and the design of the study. Following this is a description of the scales used in the present investigation and a detailed examination of their reliability and validity properties. Finally, the properties of the translated version of the scales is considered and the chapter ends with the presentation of the achievement measures used in this study.

3.2 Methodological Problems in the Assessment of Self-Referent Constructs.

Lengthy discussions of general and particular methodological problems involved in the assessment of self concept can be found in Shavelson et al. (1976), Wells and Marwell (1976), and Wylie (1974). A detailed presentation of these assessment problems is beyond the scope of this work; therefore, what follows is only a brief discussion of some of the most common methodological considerations. Although the points made below refer to self-concept measurement, they could be generalized to locus of control as well, given that most of these arguments would apply to personality measurement in general.

3.2.1 Vague and Incomplete Theoretical Formulations:

Systematic reviews of self-concept research emphasize the inadequate theoretical models, and the wide array and imprecision of definitions used to infer the construct

(Burns, 1986; Shavelson, Hubner and Stanton, 1976; Wells and Marwell, 1976; Wylie, 1974; 1979). As Wylie (1974) comments:

"The basic constructs as defined in the writings of self-concept theorists frequently seem to point to no clear empirical referents" (p.8).

The measurement instruments developed from inadequately defined constructs might be of dubious reliability and validity. They might also bear little relevance to the construct they are supposed to measure. The diverse content of items typically included in many scales is a reflection of the failure to clearly define the construct of self-concept. This state of affairs makes it difficult to relate theory to test construction and results.

3.2.2 The Poor Quality of Measurement Instruments:

Several researchers (Shavelson, Hubner and Stanton, 1976; Wylie, 1974, 1979) point out that the unmanageable array of instruments used to measure self-concept, the limitations in the quality of these instruments, and the serious methodological shortcomings in empirical research make the attempt to synthesize reliable and valid information about the construct difficult.

Another difficulty in interpreting measures of self-concept arises from the fact that data are not readily available on the equivalence of various self-concept instruments. Many researchers have developed their own instruments which have been poorly checked for reliability and validity, and often poorly described. This prevents opportunities for replication and many instruments have been used only once. It is understandable that this state of affairs makes the generalizability across studies impossible.

3.2.3 The Problem of Phenomenal Variables:

Self-concept theorists argue that one cannot understand and predict human behaviour without knowledge of the individual's conscious perceptions both of his environment and his self. This central role accorded to one's conscious perceptions, cognitions and

feelings (phenomenological approach) creates the problem that research in the field of self-concept must operate without the advantage of an external criterion. The self-concept must necessarily be inferred from the behaviour of the subject, and for research purposes this is essentially what the subject has to say about himself based on his subjectively interpreted experiences (Burns, 1986). The implication of this is that self-concept theorists must employ R-R (response - response) designs instead of the more usual S-R (stimulus - response) ones. Indeed, this seems to be the case in the area of self-concept research. The limitation of this type of research is that cause - effect laws can never be unequivocally demonstrated. In addition to the ambiguities created by the use of this type of design, there is much danger of artifactual contamination between the two measures being correlated, a fact which requires extra precaution in establishing operationally independent measures for the antecedent responses and the consequent responses (Wylie, 1974).

3.2.4. The Limitations of Self-Report Techniques:

By far the most common approach used in self-concept measurement has been the use of standardized self-reports (Wells and Marwell, 1976), although there are various problems inherent in such an approach. The limitations of self-report techniques have preoccupied a number of writers (Burns, 1986; Combs, Soper and Courson, 1963; Wylie, 1974). Combs, Soper and Courson (1963) referring to self-concept measurement, argue that most of the studies assuming to measure self-concept are in fact studies of self-report. How closely the two will approximate appears to depend on such factors as a) the clarity of the individual's awareness; b) the availability of adequate symbols for expression; c) the willingness of the individual to cooperate; d) social expectancy; and e) the individual's feelings of freedom from threat.

Firstly, lack of knowledge will depend on the clarity of the individual's awareness. Some aspects of self may only exist at minimal levels of awareness and therefore would be difficult if not impossible to be called into clear figure.

Secondly, the individual must possess a sufficient vocabulary in order to express his self-concept, not only in interviews but on rating scales as well, where the meaning and interpretation of items causes difficulty.

Thirdly, individuals are often well aware of the expectancies of others, and the way they present themselves is affected by these expectancies. Some of these distortions are referred to as response sets. Self-presentation and self-disclosure tactics, acquiescence and social desirability seem to be the most pervasive in self-report techniques and they will be discussed shortly below.

3.2.4.1 Self-Presentation and Self-Disclosure:

There has been a great deal of stress on the fact that psychological research is a social situation and that social-interaction characteristics of the research set up must be considered in interpreting the data. Orne (1969) emphasized the 'demand characteristics' of the experimental situation, in which subjects behave in the way they think the researcher wants them to behave. Rosenberg (1969) has argued that subjects are motivated to present themselves as having favourable traits in order to gain approval from the experimenter. However, this positive self-representation is not a systematic universal bias. Wylie (1974) notes for example that high-status subjects provide more modest self-presentations than might be expected when seeking counselling. Such self-presentation variables create various and at present unquantifiable distortions in self-report instruments which might be of vital importance to self-concept measurement.

Moreover, the degree and depth of self-disclosure may vary from one individual to another. Researchers have pointed out to stable individual differences but mainly to situational variables which may affect self-disclosure.

3.2.4.2 Social Desirability:

Social desirability is the tendency to attribute to oneself traits or characteristics which the social environment considers socially desirable. The result of this tendency to respond on a socially desirable manner on self-report instruments decreases the construct validity of these instruments. But the answer to the question of the degree to which social desirability tendencies influence self-report measures is complicated by some questionable assumptions that are implicit in the social desirability definition.

The first assumption is that subjects have learned the social normative standards and have accepted them as their own personal ideals. It seems, however, that there are individual differences in subjects' judgements of what is socially desirable and moreover, personal desirability is not necessarily the same as either individually perceived social desirability or group norms regarding social desirability (Wylie, 1974). The second assumption implying that there is an all pervasive and very strong influence of group social desirability norms upon subjects' behaviours is equally questionable. As these ambiguities have not been resolved, the only thing that the researcher can do is to find ways to minimize these influences, such as establishing anonymous and non-threatening test conditions which make it worthwhile from the subjects' point of view to be as honest as possible.

3.2.4.3 Acquiescence:

This was initially referred to an individual's tendency to agree with test items in a particular test irrespective of their content. Later, it was suggested that these individual differences may manifest themselves in a broader behaviour domain, ranging from within-test-session consistencies to consistencies across specific test forms, through to consistencies across various test and non-test situations. Such a tendency would cause spuriously high reliabilities as it is a systematic bias focused in one direction. On the other hand, acquiescence lowers validity, since it is irrelevant to the criterion being measured. The research on acquiescence is very long and the degree of importance

allocated to this tendency by different theorists varies from extreme importance to extreme unimportance (Wylie, 1974).

The use of familiar and understandable language and the motivation of the subjects to pay attention to the content are suggested as possible ways of minimizing acquiescent-response tendencies.

Despite the criticism voiced against self-report measures, given the ultimately subjective nature of self-concept, its measurement by self-report measures seems inevitable. It is typically measured by dichotomous or Likert type responses to a number of questionnaire items, which are summed to produce a self-concept score. It has been suggested that the ratings of observers could be used to complement an individual's self ratings with the thought that verbal and non-verbal behaviours presented by individuals to others are less subject to social desirability effects than responses to self-report scale items. However, it seems that these other-reports may be more susceptible than self-reports to another confounding factor in self-concept assessment: the attempt to exhibit high levels of positive self-concept. Appearing high in self-concept can be used defensively against threats to the self. Such defensive reactions may increase exhibited levels of self-concept, thereby artifactually inflating other-report as well as self-report measures (Blascovich and Tomaka, 1991).

3.3 Sample :

424 children (230 boys and 194 girls) in grades 3 to 6 participated in the study. The age range was between 8 to 12 years. 54.24% of the sample were boys and 45.75% girls. There was no difference in the proportion of boys to girls ($z = 1.7$, n.s.). Table 4 presents the number of male and female subjects within each grade level.

Table 4
Distribution of Sample by Grade Level and Sex.

Sex	Grades				
	3	4	5	6	Total
Male	50	62	55	63	230
Female	58	43	51	42	194
Total	108	105	106	105	424

The sample was drawn from six primary state schools located within the three educational districts in the county of Attiki. Three of these are in the centre of the city, two in East Attiki and one in West Attiki. According to the Bulletin of the Department of Special Needs of the Ministry of Education (1988), there are 24 schools with special classes in the centre of Athens, 14 in East Attiki and 27 in West Attiki. The six schools were selected randomly among the 12-grade schools with special classes.

All schools (except one) from which the present sample was drawn had a shifting timetable, that is, one week the school worked during the morning and the next week during the afternoon, the timetable being either 8.30 a.m.-1p.m. or 2 p.m.to 6.10 p.m. All six schools were 12-grade schools, that is, they had two classes per each grade (grades 1-6).Two of them shared the same building with another 6-grade school. Below is a list of the six schools, their location and their type.

Table 5
Location, Timetable and Size of Schools.

Code	Location	Timetable	Size
A	centre	shifting	12 grades
B	centre	shifting	12 gr. + 6 gr.
C	centre	shifting	12 grades
D	West Attiki	shifting	12 grades + 6 gr.
E	East Attiki	morning only	12 grades
F	East Attiki	shifting	12 grades

Two of the schools (A and E) were 'experimental' schools and their timetable was extended by half an hour a day. Class size in these schools ranged between 20-34 children per class. The distribution of sample by school, grade, sex and group (special/regular class) is given in Tables 6 and 7a and 7b.

Table 6
Distribution of Sample by School, Grade, Special/Regular.
Schools

	A		B		C		D		E		F	
Gr	SC	RC	SC	RC	SC	RC	SC	RC	SC	RC	SC	RC
3	4	17	-	-	5	27	5	24	-	-	4	22
4	6	18	-	-	-	-	7	26	2	20	3	23
5	1	21	6	27	-	-	4	17	4	22	4	-
6	2	17	9	20	-	-	-	-	2	21	4	30
T	13	73	15	47	5	27	16	67	8	63	15	75

Gr. = grades; SC = Special Class; RC = Regular Class; T = Total.

Table 7a
Distribution of Special Class (SC) Sample by School, Grade and Sex.
Grades

	3		4		5		6	
Sch	M	F	M	F	M	F	M	F
A	4	-	4	2	1	-	2	-
B	-	-	-	-	3	3	6	3
C	1	4	-	-	-	-	-	-
D	3	2	4	3	-	4	-	-
E	-	-	2	-	4	-	2	-
F	1	3	2	1	2	2	2	2
Total	9	9	12	6	10	9	12	5

Sch. = School; M = Male; F = Female

Table 7b
Distribution of Regular Class (RC) Sample by School, Grade and Sex
Grades

	3		4		5		6	
Sch.	M	F	M	F	M	F	M	F
A	5	12	14	4	12	9	10	7
B	-	-	-	-	14	13	13	7
C	14	13	-	-	-	-	-	-
D	11	13	16	10	8	11	-	-
E	-	-	11	9	11	-	11	10
F	11	11	9	14	-	-	17	13
Tot.	41	49	50	37	45	42	51	37

M = male; F = Female.

The areas from which the sample was drawn included families ranging in socioeconomic status from working class to middle class. The socioeconomic status of the subjects was defined on the basis of the father's occupation which was scored on a 5-point scale developed from the occupational categories as defined by the National Statistical Service of Greece (1975). These occupational categories were defined as follows:

- 1) Unskilled workers, farmers, cattle-raisers, exploiters of forests, fishermen, undermost officials.
- 2) Skilled workers and subordinate official staff.
- 3) Small scale businessmen (e.g. shop owners).
- 4) Lease-holders, high officials (i.e. graduates)
- 5) Self employed professionals (i.e. physicians, dentists, surgeons, lawyers, solicitors, architects, teachers), merchants and industrialists.

Demographic data requested by all subjects were: age, sex, grade level, school and parental occupation. It was not possible to obtain ability estimates for the subjects of this study because IQ testing is not in use in schools in Greece and it would be difficult if not impossible to get permission to administer an IQ test to children. Care was taken, however, to include children in the sample who were within the average range of IQ according to their class teachers. Especially, as regards the SC group, children who were identified as 'mentally retarded' by the Special Needs teacher (which was understood to be children with an IQ under 80) were not included in the sample.

The Regular Class group consists of 352 children, 187 boys and 165 girls. That is, 53.13% of the sample were boys and 46.87% girls. There was no difference in the proportion of boys to girls ($z = 1.12$, n.s.). These children were selected from the same grade level and classroom as the SC group. Children who had previous special class placement or were absent on one of the testing occasions were not included in the sample (Table 8).

Table 8
Distribution of Regular Class (RC) Sample by Grade Level and Sex

Sex	Grade Level				Total
	3	4	5	6	
Male	41	50	45	51	187
Female	49	37	42	37	165
Total	90	87	87	88	352

The Special Class (SC) group consisted of 72 children (43 boys and 29 girls) attending special classes. In this group 59.72% were boys and 40.28% were girls. Again there was no significant difference in the proportion of boys to girls ($z = 1.53$, n.s.). The children who participated in this study have been identified as having learning difficulties by the school authorities, in one or more subjects. In most cases the problem area was reading. Children were attending the special classes for 3-5 periods a week depending on their needs. For the rest of the time they remained in the regular classroom. The period of special class attendance ranged from five months to two years. Children with serious physical, mental and emotional handicaps were not included in the sample. *(see section 1.2.4.2)* Table 9 shows the distribution of SC sample by grade level and sex.

Table 9
Distribution of Special Class (SC) Sample by Grade Level and Sex.

Sex	Grade Level				Total
	3	4	5	6	
Male	9	12	10	12	43
Female	9	6	9	5	29
Total	18	18	19	17	72

After all testing was completed, three groups of children were identified from this larger sample: Special Class children (SC), Low Achieving (LA), and Average to Normally Achieving (NA) children. This decision was taken on the basis of an inspection of raw data which showed that a substantial number of Regular Class children were not achieving very highly in class and were in the opinion of the school staff as being not very much different from Special Class children. It was decided, therefore, that a subgroup of Regular Class children would be extracted as a low achieving group (LA). This group consisted of children who had a score of 1 or 2 in either reading or maths and no more than 3 on the other subject. None of these students had been formally identified as having learning difficulties. The normally achieving children (NA) were those who obtained a score of at least three in the two subjects. The distribution of Low achieving (LA) and normally achieving (NA) groups by grade and sex is given in Tables 10 and 11. In each case there was no significant difference in the proportion of boys to girls (LA, $z = 0$, n.s.; NA, $z = 1.21$, n.s.).

Table 10
Distribution of Low Achieving (LA) Group by Grade Level and Sex.

Sex	Grade Level				Total
	3	4	5	6	
Male	7	9	11	13	40
Female	9	8	12	10	39
Total	16	17	23	23	79

Table 11
Distribution of Normally Achieving Group (NA) by Grade Level and Sex.

Sex	Grades				Total
	3	4	5	6	
Male	34	41	34	38	147
Female	40	29	30	27	126
Total	74	70	64	65	273

3.4 Testing Procedures :

All testing took place in Athens, Greece during December 1989 to February 1990, following approval by the Greek Ministry of Education.

The scales were administered to subjects in their regular classrooms in groups of approximately 20 children each, over two testing sessions. These sessions were conducted on two consecutive days for each group. Each session lasted 35-40 minutes. Children in special classes were sometimes tested separately in small groups of three or four. The order in which the measures were administered was counterbalanced across grades.

Testing was conducted by the researcher always in the absence of the class teacher. Uniform written directions were read aloud to all subjects before the commencement of each session. Sample items preceded each test to familiarize children with the tasks. Task items were read aloud and explained until children demonstrated a clear understanding of how each test was to be answered. Then children were informed that the questionnaires were not tests but designed to find out their feelings and thoughts about themselves and school. Emphasis was placed on the need for honest responses, with subjects being told that neither teachers nor parents would have access to their answers. Questions were read aloud by the researcher in all grades although students in grades 5 and 6 had the questionnaires in front of them while the researcher was reading. Individualized help was given to any child who displayed difficulty with the items. At the end of each questionnaire children were asked to write their name and class on the sheet. This was to enable the researcher to identify children and sort them into their appropriate group. The AL Mathematics Test was given to children by their classroom teacher on a separate occasion.

3.5 Design :

This study employed a cross-sectional, quasi-experimental design. The dependent variables were scores on self-concept and locus of control measures while the independent variable was achievement as measured by teacher grades.

The hypotheses presented in this study concerning differences between groups were tested by univariate and multivariate analyses of covariance. These types of analyses were selected as offering clear criteria for deciding whether two or more samples differ significantly in relation to the variables of interest. In addition covariance is a statistical way of exercising control in attenuating the possible error effects between the groups being compared. It is considered as a means of increasing the precision of the experiment and of removing potential sources of bias. This form of analysis is also of special importance when individuals cannot be assigned at random to the experimental conditions. The analysis of covariance model is obtained by combining a regression model with the analysis of variance model. It demands the same set of assumptions that apply to analysis of variance. In addition, one must assume homogeneity of regression among the various population levels represented by the groups or treatment levels, and that the residuals are normally distributed with a mean of zero and the same variance within each population (Hays, 1988).

The particular design was a 2 x 3 x 4 factorial including a covariate (father's occupation) kept constant over the occasions. The respective levels were group (SC, LA and NA), sex (boys and girls), and grade level (grades 3,4,5,6).

To examine the relations between the different constructs correlational analyses were performed in which Product Moment correlations were computed. Based on correlational analyses, path models were developed which were tested through path analysis in order to examine the causal relationships between achievement and the self-constructs. The various criteria used both in construing and accepting the particular models, accompanied by diagrams are discussed in the Results section.

Before any of the above stated analyses was attempted, the factor structure of the two self-concept scales (SDQ and PCS) was checked within the present sample. The results of the factor analysis will be discussed in section 3.6.1.6.

3.6 Instruments :

The instruments used in this study were of two kinds:

- a) Self-report questionnaires, measuring self-concept, locus of control and causal attributions derived from schedules devised by Marsh (1983), Harter (1982) and Crandall et al. (1965). The rationale for choosing these tests stems from the fact that they seem to draw from the best of theory available at the time of their development. Moreover, they have been used in many research studies involving primary school children and appear to be most satisfactory instruments for use with such groups.
- b) The AL Math Test used as an achievement measure.
- c) Teacher ratings of children's academic performance were also collected as measures of achievement.

3.6.1 Self-Concept and Locus of Control Measures

3.6.1.1 Overview:

The scales measuring self-concept and locus of control were all self-report questionnaires. The problems with this type of measurement have been already discussed (section 3.2.4). Nevertheless, most research on the variables studied (self-concept and locus of control) is still primarily dependent upon the subject's report of himself. While assuming that the children's scores on the various instruments will reflect their true feelings and thoughts, the limitations of this kind of measurement were also kept in mind.

Self-concept was measured by:

- a) Two subscales from the Self Description Questionnaire (SDQ), namely, Verbal self-concept (SDQR) and Maths self-concept (SDQM); and
- b) Three subscales from the Perceived Competence Scale for Children (PCS); the Perceived competence Evaluation (PCE) and the Perceived competence Affect (PCA), and Global Self-Worth (PCG).

These scales (SDQ, Marsh, Smith and Barnes, 1983; PCS, Harter, 1982) were chosen as representing two of the most recent attempts to measure multidimensional aspects of self-concept. Both instruments appear to be adequate and comprehensive measures of the different aspects of self.

Locus of control and causal attributions were measured by the Intellectual Achievement Responsibility Questionnaire (IAR, Crandall et al., 1965). This measure is one of the few which was targeted exclusively on children's achievement behaviour. As Lefcourt (1991) states "*...the IAR remains a standard measure used in studies where achievement behaviour is the criterion of interest*".

3.6.1.2 Translation :

All the questionnaires used in this study were translated from English to Greek.

There are four basic translation techniques which can be used alone or in combination for the special needs of any research project (Brislin, 1980) : back translation, the bilingual technique, the committee approach, and pretest procedures.

In this study both back translation and pretest procedures were used. A four step procedure was followed in order to provide adequate translation from source (English) to target language (Greek).

First, the questionnaires were translated from English to Greek by the researcher. Special attention was given to the equivalence of meaning. Also care was taken to avoid colloquialisms, hypothetical phrasing and the English passive tense. Then, a bilingual person unfamiliar with the English version translated the material back to the source language. The third step was to examine the original and back-translated versions for

errors that lead to differences in meaning. The necessary corrections were made until there was no change in meaning in comparing the back translated and the original. However, this was not considered enough, as it was thought that several factors besides good translation could create seeming equivalence between source, target and back translation. Brislin (1970) refers to the following factors :

- a) Translators may have a shared set of rules for translating certain non-equivalent words and phrases.
- b) Some back translators may be able to make sense out of a poorly written target language version.
- c) The bilingual translating from the source to the target may retain many of the grammatical forms of the source. This version would be easy to back-translate, but worthless for the purpose of asking questions of target language monolinguals, since its grammar is that of the source not the target. To avoid this kind of error a monolingual native speaker of Greek was asked to check the Greek text for phrasing and terminology errors. She was especially urged to check if the grammar was good, if words were used which most native speakers would understand, and if children between ages 8-12 would have any problem reading the material and answering questions about it. After the necessary revisions of the translated material, it was again back translated into the source language, and another bilingual speaker was requested to compare again the source and the back translation.

Finally, the questionnaires were field tested in Athens to ensure that children would be able to comprehend all the material to which they would be expected to respond. Fifteen subjects were given the questionnaires and were asked probing questions about some items which the researcher thought might still create uncertainty. Some items were again revised after this, and the final form of the instruments was decided upon.

The source questionnaires appear in Appendices 4, 6 and 8 and the Greek version of the questionnaires in Appendices 19 to 21.

3.6.1.3 Self-Concept Measures.

Two subscales from the Self Description Questionnaire (SDQ, Marsh, Smith and Barnes, 1983), the Verbal (SDQR) and Maths (SDQM) self-concept scales and three subscales from Perceived Competence Scale (PCS, Harter, 1982), Perceived Competence Evaluation (PCE), Perceived competence Affect (PCA), and Global self-Worth (PCG), were used to measure specific academic self-concepts, general academic self-concept and global self-esteem. The psychometric properties of the scales will be discussed separately for each of them.

3.6.1.3.1 The Perceived Competence Scale for Children (PCS):

The Perceived Competence Scale for Children (Harter, 1982) was used to obtain measures of children's general academic and global self-esteem measures (see Appendix 4).

This instrument is designed for primary and preadolescent children. It includes a Global Self-Worth scale and five domain specific scales that are factorially distinct: Scholastic Competence, Social Acceptance, Athletic Competence, Physical Appearance, and Behavioural Conduct. For the present study only the Global Self-Worth and Scholastic Competence scales were used because these scales pertain most directly to the issues under investigation here. Global Self-Worth is inferred from items which refer to a general sense of self-worth. The Scholastic Competence scale is based on a collection of items that refer to general components of school life and are 'content free'.^{*} Six items were used to assess cognitive evaluation, four items to assess cognitive affect and four items comprised the subscale measuring global self-worth.

The construction of the scale by Harter was based on the following assumptions:

a) Self-conceptions about competence are especially important for children, both in a domain-specific sense and with respect to the child's perceived self-worth;

** The items do not refer to particular school subjects.*

b) Children do not feel equally competent in every domain, and those who are eight years and older can make meaningful distinctions about their competence in different domains in their lives;

c) Global Self-Worth is qualitatively different from self descriptions in each of the five specific domains (Harter, 1982;1985a, 1985b).

The particular competence areas to be included in Harter's scale were determined by "*...our own observations of the mastery behaviours most salient for elementary school children, and thus they provided an initial framework. Interviews with children were then designed to determine which activities within these domains were particularly important to children in making judgements of competence*".(Harter, 1982, p.88).

The aim, therefore, was to create an instrument with scales that are factorially distinct because of their a priori substantive conceptualizations.

The scale contains 28 items. Each item presents both a negative and a positive wording of the characteristic it represents, and across items the favourable self-descriptions are sometimes at the left end of the scale, sometimes at the right. Harter argues that this '*structural alternative format*' is used to "*offset the tendency to give socially desirable responses*" (Harter, 1982, p. 89). The child has to choose between two logically opposed statements (e.g. some kids often forget what they learn, but, other kids can remember things easily). After the choice of the statement which is most like him, he indicates whether the statement is 'really true of me' or 'sort of true for me'. Each item is scored from 1 to 4, where a score of 1 indicates low perceived competence, and a score of 4 reflects high perceived competence. Scores are summed and then averaged for each subscale, resulting in separate subscale means.

Standardization samples for the original scale comprised four groups, ranging from lower-middle to upper-middle class, 90% were white, and included children from grades 3 to 8, all from Colorado, USA. Total sample was 1,543; 789 girls and 754 boys (Harter, 1985a).

Subscale reliabilities were assessed by employing coefficient alpha which provides an index of internal consistency. Twenty-four alpha coefficients are given. The reliabilities for the subscales are Cognitive Competence, 0.82; Social Acceptance, 0.78; Athletic

Competence, 0.83; Physical Appearance, 0.80; Behavioural Conduct, 0.74; and Global Self-Worth, 0.80 (Harter, 1985a). Test-retest reliabilities are given from a sample of 208 Colorado children retested after three months, and a New York sample of 810 children retested after nine months. These correlations were between 0.70 and 0.87 for the Colorado sample, and between 0.69 and 0.80 for the New York sample (Harter, 1982).

Six sets of intercorrelations between subscales are given, with samples ranging from grades 3 - 4 to 6 - 8. Mean interscale correlation coefficients range from 0.14 to 0.58. The correlations of the general self-worth subscale with each of the three competence subscales tended to be among the highest, 0.40 to 0.58, while the relationship between Cognitive Competence and both the Social and Physical subscales tended to be the lowest. There is a tendency for larger interscale coefficients to occur among younger children, perhaps implying that the scales have poorer discriminant validity for that age group.

Factor analyses were performed using both orthogonal and oblique solutions with responses by children in third through ninth grades. Harter (1982) found reasonably similar factor loadings, although factor loadings were somewhat less congruent for responses by third grade students. She contends that the PCS may not be appropriate for children younger than 8 (Harter, 1982; 1983; Silon and Harter, 1985). Silon and Harter also found that the a priori PCS structure was not well defined for responses by educable mentally retarded children who were older than 8 but had mental ages of less than 8 (Silon and Harter, 1985).

In a later study, Harter (Harter and Connell, 1984) found that the Cognitive Competence subscale could be subdivided further into two subscales. Approximately half of the items seemed to tap an evaluation of one's competence based on relatively objective criteria such as the speed of doing one's work, or the ease of remembering something. The second set of items was referring to feeling good or bad about one's work. She suggested therefore that the Cognitive competence scale could be subdivided

into Competence Evaluation and Competence Affect. It is interesting that the findings of the present study to (be discussed later in section 3.6.1.6.1) are in line with this.

The only reported multitrait-multimethod matrix analysis was performed by Marsh and Gouvenet (1989) on PCS and SDQ1. The results provided strong support for both the convergent and discriminant validity of the instruments. Marsh and Gouvenet also report correlations between PCS and SDQ1 subscales. The SDQ1 school reading, and math scores were most substantially correlated with the PCS cognitive score (range = 0.40 to 0.54). No other correlations have been reported between any PCS subscale scores and a corresponding subscale of some other test. Wylie (1989) points out that there is no information about how the Global Self-Worth scores correlate with a similar measure of this construct such as, for example, the Rosenberg-Simmons Self-Esteem Scale.

The manual (Harter, 1985a) includes a form for teachers' ratings of children's actual behaviours (not their self-concepts) in each of the various domains, using three items per domain, which Harter says she has found adequately reliable. However, no correlations between these ratings and children's domain-specific scores have been reported.

As support for the validity of the PCS Harter (1985a) reports correlations of 0.50 to 0.65 between Global Self-Worth scores and perceived parental and peer regard, and rs ranging from 0.70 to 0.80 between Global Self-Worth scores and 'affect' as measured by a Dimensions of Depression Scale for Children. These findings are in line with theoretical predictions, although Wylie (1989) comments that the large size of the affect correlations raises questions about the discriminant validity of the Global Self-Worth *Scale*.

Alterations in the Greek translation of this scale are shown in Appendix 5. These alterations were only minor, involving the replacement of some words and changes in a few grammatical forms. The three subscales as used in this study appear in Appendix 4 and the Greek Text in Appendix 19.

3.6.1.3.2 Self Description Questionnaire (SDQ):

The SDQ was selected as one of the self-concept measures because of its well established construct validity and its incorporation of scales that measure key self-concept facets, specific to the goals of the present investigation.

The SDQ is an eight -scale instrument intended to measure seven aspects of the self-concepts of pre-adolescent children (ages 7 to 13 years) as well as their general sense of worth. The construction of the instrument was based on Shavelson's hierarchical model of self-concept (Shavelson et al. 1976; Shavelson and Bolus, 1982). Shavelson and his colleagues described self-concept as

"...multi-faceted and hierarchical, with perceptions moving from inferences about self in subareas (e.g. academics-reading and mathematics) to broader areas (e.g. academic and nonacademic), and finally to general self-concept" (Marsh, Smith and Barnes, 1983, p. 334)

By positing a hierarchical model, the researchers emphasized the domain specificity of self-concept while still recognizing a general construct. They argue that general self-concept is stable, but as one descends the hierarchy, the specific self-concepts depend increasingly on particular situations. They also emphasize that self-concept contains both a descriptive and an evaluative element.

An early version of the instrument consisted of 100 items. On the basis of factor analysis 66 items were selected, which were again revised and reduced to 62. This first version consisted of seven scales (Marsh, Barnes, Cairns and Tidman, 1984), four nonacademic (Physical Abilities/Sports, Physical Appearance, Peer Relations, Parents Relations), and three academic (Reading, Mathematics and All School Subjects). The four nonacademic scales had 8 items each, and the three academic had 10 items each. In each scale, half of the items refer to interest and enjoyment ('affective' items) and half to ability ('cognitive' items). Some of the items in each scale were negatively worded. However these negatively worded items proved problematic. Marsh (1986b) found that young children tended to respond inappropriately to these items, therefore they were excluded from later versions of the scale.

Self-concept ratings were summarized by seven factors and three total scores. The three total scores were determined by summing up factor scores for the four nonacademic scales (Total Non-academic Self-Concept), the three academic scales (Total Academic Self-Concept), and all seven scales (Total Self-Concept). Recently, a General Self scale based on a modification of the Rosenberg Self-Esteem Scale has been added to the SDQ.

SDQ was validated using different samples, both males and females and a wide range of socioeconomic and ability levels. However, samples were mainly drawn from Sydney, Australia, and this poses a restriction on the generalizability of the findings. In general, alpha coefficients are very high. The mean alpha values across different samples were between 0.82 to 0.93 (Wylie, 1989). For the Normative Sample which consisted of 3,562 Australian subjects, alphas were: Physical Abilities/Sports, 0.83; Physical Appearance, 0.90; Peer Relations, 0.85; Parent Relations, 0.80; Reading, 0.89; Mathematics, 0.89; All School Subjects, 0.86; General Self, 0.81; Total Non-academic, 0.91; Total Academic, 0.92, Total Self, 0.94 (Wylie, 1989).

Marsh, Smith, Barnes and Butler (1983) report test-retest reliabilities of six months apart ranging from 0.54 to 0.74.

Numerous exploratory and confirmatory analyses of SDQ data have been reported. (Marsh, 1987a, 1990b; Marsh, Barnes, Cairns and Tidman, 1984; Marsh, Parker and Barnes, 1985; Marsh, Smith and Barnes, 1983). Some of them were performed to explore and support the predicted dimensionality of the instrument, some to check the invariance of dimensionality across groups differing in age, sex, and national origin. The analyses did not all involve the same version of SDQ, and some used item scores while others used item-paired scores as the input. Generally the findings supported the intended multidimensionality of the SDQ by identifying the hypothesized factors. Each of the SDQ scales loaded fairly highly on a target factor and showed only negligible loadings on the other factors.

Marsh (1987b) applied various models of confirmatory factor analysis to the paired-item scores of 1,000 fifth graders to check the invariance of factor structure across sexes. He concluded that

"...the a priori structure was reasonably invariant across responses by males and females" (p. 476).

The generalizability of the factor structures across age, and nationality have also been explored. Confirmatory factor analyses has shown that the scales are fairly invariant across grades 2 to 5 (Marsh and Hocevar, 1985). However, the factors were more clearly defined in the results for grades 4 and 5.

The cross-national generalizability of the scale was tested by Marsh and Smith (1987) comparing English and Australian preadolescents. They found that the factor structure for the two groups was reasonably invariant.

Convergent validity was examined by using teacher rating scales of students' self-concepts as the criterion (Marsh, Parker and Smith, 1983). These appeared to be satisfactory, and the greatest student-teacher agreement tended to be in academic areas while the lowest was on Relations with Parents. Other validation studies involved correlations between academic subscales and matching measures of academic achievement. As predicted academic achievement was found to be most highly correlated with the specific area of self-concept to which it was most logically connected. Similarly, Maths self-concept was found to correlate with mathematics achievement tests and teachers' ratings of mathematics abilities thus supporting the discriminant validity of the scale. Significant correlations were reported by Marsh and Parker (1984) between IQ scores and the academic subscales , but correlations with the nonacademic subscales were not significant.

Correlations among the subscales were reported to range from close to zero to 0.42 (Marsh, Smith and Barnes, 1985). These correlations were generally consistent with the Shavelson model which predicts substantial correlations among the three academic, the two social and the two physical factors. An unexpected result was the near-zero correlations between Maths and Reading self-concepts. Marsh, Smith and Barnes

(1985) attempted to explain this lack of correlation by positing that each student develops a Maths and a Reading self-concept not only by comparison with others' performance, but also by taking note of the difference between his own performance in Maths and Reading. Marsh and Shavelson (1985) have used confirmatory analysis to test a number of models that take into account the lack of correlation between Maths and Reading self-concepts. The proposed model posits two second order academic factors (Verbal Academic and Maths Academic) and a second order nonacademic factor. They concluded that

"This model is consistent with Shavelson's assumption that self-concept is hierarchically ordered, but the particular form of this higher-order structure is more complicated than previously proposed" (p.115).

In general, SDQ appears to be an adequate measure of the multidimensional aspects of self-concept. Blascovich and Tomaka (1991) in their review of measures of self-concept, state that SDQ is susceptible to response bias and socially desirable responding. They recommend its use for the measurement of specific aspects of self-concept but not for the measurement of global self-esteem.

In this study four subscales of the SDQ were administered to the children for testing (Verbal self-concept, Maths, Relations with Friends, Relations with Parents), but only two of them, Maths and Verbal self-concepts were considered for analysis. Children were asked to respond to simple declarative sentences with one of five responses: false, mostly false, sometimes false/sometimes true, mostly true, true. Each subscale contained eight positively worded items. Negative items were excluded, following Marsh's (1986b) recommendations.

There were no major alterations in the Greek version of the scale. The four original subscales appear in Appendix 6, the Greek version in Appendix 20, and the revised items in Appendix 7.

3.6.1.4 The scale for Locus of Control and Causal Attributions: Intellectual Achievement Responsibility Questionnaire (IAR).

The IAR was used to measure both the children's perceptions of locus of control and their causal attributions. It is one of the few scales designed for children and the only one measuring locus of control in academic settings which has been standardized and extensively used since its publication (Lefcourt, 1981). It was developed to *"assess children's beliefs that they, rather than other people, are responsible for their intellectual academic successes and failures."* (Crandall et al., 1965).

The IAR consists of 34 forced choice items. Each item describes a positive or negative achievement experience that routinely occurs in children's lives. Each item is followed by one alternative stating that the event was caused by the child and another stating that the event occurred because of the behaviour of someone else (parent, teacher, peer) in the child's environment. The researchers limited the external cause to 'powerful others' rather than to such factors as luck, chance, social systems, considering this agent to be more appropriate for the school-age child. Children respond to these statements describing hypothetical outcomes by endorsing one of two causes for the outcome. Half of the items deal with internal responsibility for successes (I+), and the other half assess responsibility for failure (I-). A child's I+ is obtained by summing up all positive events for which he assumes responsibility, and the I- score is the total of all negative events for which he assumes blame. Answers are scored 0 for an external response and 1 for an internal, and all responses are combined to yield a total IAR or internality score.

Crandall et al. (1965) report low correlations between the two subscales (I+ and I-). These correlations ranged from 0.11 to 0.43. The researchers state that such low correlations may indicate that assuming responsibility for successful academic experiences may be different from assuming responsibility for failures. Weiner and Kukla (1970) have also pointed out that self-responsibility for success is independent of self-responsibility for failure. These considerations raise some doubt about the use

of the total IAR score alone. Since this score combines self-responsibility for success and failure, it may mask important differences between the two in the individual child. Spearman-Brown split-half reliabilities for a sample of 130 of the younger children were reported as 0.54 for the I+, and 0.57 for the I- subscales. For a similar sample of older children, the split-half reliabilities were 0.60 for both the I+ and I- scales (Crandall et al., 1965). Two month test-retest reliabilities for forty seven children in grades 3 to 5 were reported to be in the range of 0.47 to 0.66 for the I+ scale and 0.47 to 0.74 for the I- scale (Crandall et al., 1965).

In support of discriminant validity the researchers cite significant correlations between IAR scores and report-card grades (0.30 to 0.50) and low correlations between IAR and IQ scores (0.14 to 0.26). The IAR correlated significantly and positively with achievement measures for children in grades 3 to 5, but correlations were only occasionally significant for children in grades 6 to 12.

Evaluating some of the studies which used the IAR, Lefcourt (1991) concludes that the measure is a carefully developed scale which shows acceptable reliability and satisfactory evidence of discriminant and convergent validity. In line with this, Phares (1976) has noted that the IAR is probably the most suitable measure of perceived control for children in relation to academic achievement.

Although not originally designed to do so, because many of the IAR items specifically refer to attributions of either ability or effort, Dweck (1975; Dweck and Reppucci, 1973) has suggested that it can be used for the measurement of causal attributions by dividing it into four subscales: success/ability, success/effort, failure/ability and failure/effort. He, thus, subdivided the I+ subscale into I+E (success/effort) and I+A (success/ability); and the I- subscale into I-E (failure/effort) and I-A (failure/ability). However, many of the items cannot be classified unambiguously as representing ability or effort. It was decided, therefore, to include in the four subscales measuring attributions only those items which could unambiguously be classified as representing effort and/or ability attributions. Six items were selected to be included in each of the four subscales which were thought to clearly represent ability or effort attributions.

Two of the items of the questionnaire, items 1 and 22 of the original scale, were omitted in the Greek version. They both refer passing to the next grade, something which does not apply in Greece, where children are automatically promoted to the next grade at the primary school level. Thus the Greek scale consisted of 32 items, 16 in each of the two subscales (I+ and I-), and 6 items in each of the four subscales (I+A, I+E, I-A, I-E).

Throughout the questionnaire the hypothetical expressions 'suppose..' or 'when..' have been changed to more direct statements, after realizing during the pilot study that children had difficulties with this kind of expression. The original questionnaire appears in Appendix 8, the Greek version of it in Appendix 21, and the revised items of the scale in Appendix 9.

3.6.1.5 Properties of the Scales as Used in this Study:

Since the scales selected as measures of self-concept and locus of control/causal attributions have been used mainly in USA, it was considered necessary to test their suitability for the Greek sample before using them in the main study. Therefore, a pilot study was conducted in Athens (February - March, 1989) to ascertain the appropriateness of the questionnaires, and to form a judgement as to whether items and procedures represented appropriate measures of the constructs under study.

The pilot study was conducted in five primary schools situated in central Athens. The sample consisted of 144 children in grades 3 to 6 (age range 9 years 7 months to 12 years 8 months). The Special Class group consisted of 24 children, while the remaining 120 were children in Regular Classes who did not have previous special class placement. Details of the distribution of the sample appear in Appendix 2.

3.6.1.5.1 Reliabilities:

Reliabilities were assessed by employing Cronbach's coefficient alpha which provides an index of internal consistency. These were moderate to high for self-concept scales and rather low for IAR. A number of items were, then, reconsidered in order to achieve higher inter-item correlations. Coefficient alphas for the main study were somewhat improved. Table 12 presents the reliabilities of the three scales (PCS, SDQ and IAR) from the pilot and main studies.

Table 12
Cronbach's alpha Coefficients for Three Scales (PCS, SDQ and IAR).

Scales		Internal Consistency	
Self-concept	Number of items	Pilot Study (N = 144)	Main Study (N = 424)
SDQ	32	0.81	0.88
SDQR	8	0.80	0.81
SDQM	8	0.89	0.90
PCS	14	0.75	0.76
PCE	6	0.75	0.74
PCA	4	-	0.62
PCG	4	0.58	0.60
Locus of Control			
IAR	32	0.60	0.65
I+	16	0.56	0.57
I-	16	0.54	0.54
I+A	6	0.48	0.53
I-A	6	0.46	0.53
I+E	6	0.57	0.60
I-E	6	0.55	0.59

The above indices of internal consistency for SDQ were very similar to the reliability coefficients reported by Marsh, Barnes, Cairns and Tidman (1984). They report a reliability coefficient of 0.86 for SDQR and 0.89 for SDQM with a sample of children in grades 3 to 5.

Similarly, the reliabilities obtained in this study for PCS are comparable with those reported by Harter (1982). She reports reliability coefficients of 0.76 for the Cognitive Competence Scale and 0.73 for Global Self-esteem with a sample of 341 children in grades 3 to 6.

The reliabilities for IAR, although similar to those reported by Crandall et al. (1965) who found internal consistency coefficients ranging between 0.54 and 0.60, were not very high. Clearly a test with low reliability is more open to question but on the other hand, tests with reliabilities of 0.50 or less may add significantly to a particular test battery. As IAR is thought to have validity in terms of the constructs being studied, the judgement was in favour of including it in the test battery.

3.6.1.5.2 Correlations between subscales:

Intercorrelations among the subscales of PCS were in the expected range, from 0.19 to 0.39. Correlations between the two subject specific subscales of SDQ, contrary to what is reported by Marsh and Shavelson (1985) were low in Regular Class but substantial in Special Class ($r = 0.66$).

In relation to IAR, correlations between the different subscales were in the predicted directions. Success subscales were highly to moderately related among themselves. The same applied to failure subscales. These correlations ranged from 0.24 to 0.83 for Regular Class (RC) group, and 0.28 to 0.82 for Special Class (SC) groups. The highest correlations were between the different subscales and total IAR scores, while correlations between success/effort - success/ability and failure/effort - failure/ability subscales were only moderate. Success and failure subscales were either uncorrelated or correlations between them were negative.

3.6.1.5.3 Conclusions:

Internal consistencies for all scales were moderate to high. Only for IAR subscales, although adequate, reliabilities were somewhat lower. These findings suggest satisfactory reliability of responses, especially considering that the respondents were children.

Correlations between subscales were mainly modest and the pattern of correlations was as postulated.

No validity tests were conducted in this study, but the validity of the scales was supported by the pattern of significant relationships found which were in the predicted directions.

In conclusion, it can be said that the results suggest that the chosen scales constitute valid and reliable measures of the constructs under study for the particular sample for which they were intended to be used.

3.6.1.6 Factor Analysis of PCS and SDQ:

Factor analyses were conducted on the responses to the two self-concept questionnaires (SDQ and PCS). The analyses were performed using the Statistical Package for the Social Sciences program (SPSSx, 1988). The purposes of the analyses were twofold:

- a) to confirm the dimensions that the SDQ and PCS are designed to measure, as discussed by Harter (1982) and Marsh (Marsh et al., 1984); and
- b) to determine if similar factors emerged from the self-responses of the Greek sample.

The items of the two scales were subjected to a principal component analysis followed by varimax rotation. The number of factors extracted was determined by Kaiser's criterion whereby only the factors having latent roots (eigenvalues), equal or greater than one are extracted (Child, 1990). Only items with rotated factor loadings $> + 0.40$ were retained and identified. Child (1990) mentions the arbitrary criterion of $> + 0.30$ as a cutting-off point, provided the sample is not too small ($N = 50$ at least).

Comparing this with other criteria, he contends that it is a quite rigorous level where not too much is taken for granted. Nevertheless, to be on the conservative side, in the present study, this arbitrary criterion was raised to + 0 .40. This stringent level of factor loading was selected to minimize the possibility of items loading on many factors and, consequently, for clearer interpretation of factors.

In considering the option of the best rotational method, it was decided to use the orthogonal solution since Child (1990) speaks about an unresolved controversy with respect to the use of oblique rotations. The varimax rotation was chosen over the other two orthogonal solutions.

Four factor analyses were performed. Item scores were initially factor analysed separately for the two groups (Special and Regular) following Child's (1990) suggestion that samples from different populations should not be pooled, in order to avoid obscuring the factors. Separate analyses were also performed on the responses of children from the whole sample and grades 5 and 6. However, since the number of subjects in the Special group was very small ($N = 72$), it was decided to consider the results from the Regular Class group only. It should be noted that the results of factor analysis from the responses of the fifth and sixth graders as well as the results from the whole sample were similar to the results obtained from the Regular group. Therefore the discussion that follows will be based on the results from the Regular Class. As part of the factor analysis, factor scores were computed by multiplying the item scores of each subject by its respective factor loadings and by summing the weighted scale scores for each subject. This was done for the reason that factor analytically derived scores generally distinguish better among the different facets. The weighted scale scores were then used in subsequent analyses. The resulting factor solutions will be discussed separately for each of the two scales.

3.6.1.6.1 Perceived Competence Scale (PCS)

Responses to all 14 items were analysed using a principal components factor analysis followed by a varimax rotation which yielded a well-defined three factor instead of the expected two factor solution (Table 13). The summed eigenvalues for these three factors amounted to 6.22, which corresponded to 44.6% of the total variance.

Several points are noteworthy in interpreting these findings. Although the factor pattern is as differentiated in this sample as in Harter's samples, it differs in some important ways from Harter's (1982) findings.

a) The Cognitive subscale is split into two well defined factors. A similar finding is reported by Harter (Harter and Connell, 1984) as well as Connell (1981) who state that upon closer scrutiny of the cognitive subscale, it was found that the items seem to tap two dimensions of one's self-perceptions of cognitive competence. Some of the items refer to an evaluation of one's competence based on relatively objective criteria such as the speed of doing one's work, the ease of remembering, and getting good grades. A second subset refers to feeling good or bad about one's work, worrying about completing schoolwork etc. Harter (1984) labelled the first subscale 'Competence Evaluation' and the second 'Competence Affect', hypothesizing that these two variables might relate differentially to other constructs.

b) It appears that children's sense of global self-worth is intimately related to their scholastic competence as three of the items which were designed to measure general self-concept seem to cluster together with the cognitive items. Item 8 ('some children think that they are not a very good person vs. being a very good person') and item 12 ('some children aren't very happy with the way they do things vs. think they do fine') appear under Factor 1 which contains cognitive items referring to what Harter names 'competence evaluation'. Item 14 ('some children are sure what they are doing is right vs. not being sure') comes under Factor 2 which is composed of the cognitive items pertaining to affect. The four items defining the third factor all refer to the general self-concept.

Given that factor loadings are high on each of the three factors (0.50 and above) with no overlapping of factors, it was decided to use the factor structure as it appears in the present study for further analysis. Clearly the subjects of the present sample seem to interpret the three items as though they were related to the cognitive domain. This might well be the result of the way education and achievement are emphasized in Greek society (see section 1.2.5).

It is interesting to note that a similar finding appeared in Dragonas's (1983) study investigating the self-concept of Greek pre-adolescents in three socio-cultural milieus (urban, rural and rapidly changing milieu). She found that the school competence factor which emerged from children's responses, apart from the strictly achievement items (good at school work, attentive pupil etc.), also included items like 'I am a good child', 'I am someone my parents are proud of'. This is in line with the findings of the present study and suggests that the emphasis put on academic achievement and excellence by the immediate and wider milieu leads children to judge their overall self-worth in terms of their academic success.

Therefore, it was decided to use the three factor solution in subsequent analyses as this solution seemed to fit best the sample of the present study.

Table 13

Factor Pattern of PCS for 352 Children in the Third through Sixth Grades.

Items (paraphrased)	Factor I	Factor II	Factor III
	PCE	PCA	PCG

I. Perceived Competence Evaluation

5. Slow finishing work vs quickly.	.60
7. Often forget vs remember.	.71
8. Good person vs not good.	.53
11. Easy to understand vs trouble.	.68
12. Happy doing things vs unhappy.	.62
13. Can figure answers vs trouble.	.69

II. Perceived Competence Affect

1. Feel good vs worry.	.62
3. Feel smart vs worry how smart.	.60
9. Like school vs not like school.	.50
14. Sure doing right thing vs not so sure.	.66

III. Global Self-Esteem

2. Change things vs remain the same..	.61
4. Sure of oneself vs not so sure.	.60
6. Feel good about the way one acts vs not feel so good.	.62
10. Happy being oneself vs wish to change.	.61

3.6.1.6.2 Self Description Questionnaire (SDQ)

The varimax rotation yielded a maximum of 7 factors with eigenvalues >1 . The first three factors clearly corresponded to the three subscales (Maths, Reading, Relations with Friends) that SDQ is supposed to measure. The next three factors loaded on items related to Relations with Parents, while the seventh accounted for an insignificant amount of the total variance. When a four factor solution was chosen, the results clearly identified the four subscales that the SDQ is designed to measure. Table 14 presents the factors that emerged, and the items with significant factor loadings on each factor. A well defined factor structure was evident in that :

- a) all factor loadings were greater than 0.40;
- b) every scale loaded substantially on at least one factor ; and
- c) each factor could be easily described in a way that makes intuitive sense.

From an inspection of the results it was clear that this factor solution corresponds closely to the one obtained by Marsh and colleagues (Marsh, Barnes, Len Cairns and Tidman, 1984). The four factors were: i) Maths self-concept (SDQM); ii) Verbal self-concept (SDQR); iii) Relations with Friends (SDQF); and iv) Relations with Parents (SDQP). The summed eigenvalues for those four factors amounted to 15.01, corresponding to 45.5% of the total variance.

Given that the focus in this study was the academic self-concept and global self-esteem, only the two subscales of the SDQ, namely, the Verbal Self Concept (SDQR) and the Math Self Concept (SDQM) were used in subsequent analyses.

Table 14

Factor Pattern of SDQ for 352 Children in the Third through Sixth Grades.

Items (paraphrased)	Factor I	Factor II	Factor III	Factor IV
	SDQM	SDQR	SDQF	SDQP
I. Maths Self-Concept (SDQM)				
5. Work in Maths is easy.	.71			
9. Look forward to Maths.	.73			
12. Get good marks in M.	.69			
15. Interested in Maths.	.78			
19. Learn things quickly.	.70			
23. Like Maths.	.83			
27. Good at Maths.	.79			
30. Enjoy work in Maths.	.80			
II. Reading Self-Concept (SDQR)				
1. Get good marks in R.		.47		
4. Like Reading.		.65		
7. Good at Reading.		.63		
10. Interested in Reading.		.66		
17. Enjoy work in Reading.		.64		
21. Work in Reading easy.		.69		
25. Look forward to Reading.		.77		
32. Learn things quickly.		.61		
III. Relations with Friends (SDQF)				
3. Have lots of friends.			.43	
6. Make friends easily.			.57	
13. Get along with others easily.			.56	
16. Easy to like.			.70	
20. Wanted as a friend.			.64	
24. Have more friends than others.			.56	
28. Popular with others.			.69	
31. Liked by most.			.73	
IV. Relations with Parents (SDQP)				
2. Understood by parents.				.40
8. Like parents.				.60
11. Parents like me.				.67
14. Bring up children same as parents.				.46
18. Spend time together.				.52
22. Easy to talk to parents.				.42
26. Get along with parents.				.63
29. Have fun with parents.				.46

3.6.2 Achievement Measures. Overview:

Teacher ratings of academic performance and a Mathematics Test prepared by the researcher were used as achievement measures.

3.6.2.1 Teachers' Ratings:

The reliability of teacher ratings was documented by several researchers although there are those who argue that teacher ratings are unreliable. Hoge and Coladarci (1989) reviewed the literature on the match between teacher-based assessments of student achievement levels and objective measures of learning. They found that the 16 studies considered in their review yielded data indicating generally high levels of agreement between teachers' judgements and standardized achievement scores. The range of correlations was between 0.28 to 0.92, with a median correlation of 0.66. They concluded that there is a strong correspondence between teachers' judgements and students' achievement.

There were several reasons for using teacher ratings as a measure of academic achievement in this study.

- a) Grades are not permitted to be used in Greek primary schools.
- b) Relevant standardized Greek achievement tests are not available.
- c) The advantage of test-based categories over teacher categories has been shown to be negligible (Egan and Archer, 1985).
- d) The within-class teacher ratings may result in stronger relationships between this measure of achievement and self-concept scores, than would achievement test scores. This is the result of the fact that contextual factors within the comparison group and evaluation from significant others are important determinants of self-concepts which are not included in standardized achievement scores (*see also section 2.10.2*).

The teachers ranked the students in five groups relative to the school class, from the highest achiever (5) to the lowest (1). This was done in two subject areas, Verbal Achievement and Mathematics. The reason for asking the teachers to rank students relative to their peers in school class was that the relative performance within the

immediate social comparison group seem to have the greatest influence on the development of academic self-concept (Marsh, 1984; Rogers et al., 1982).

3.6.2.2 The AL Mathematics Test:

The Mathematics Tests, one for each of the four grades, (Appendices 22 to 25) were used as a way of checking the subjectivity of teachers' ratings. The construction of the test was based on the National Curriculum for the teaching of Mathematics, and on the content of the prepared textbooks used in the Greek schools.

The tests for grades 4, 5 and 6 contained 25 items each, while the test for grade 3 contained 20 items. Some items require only computation and others require application of mathematical principles. It was decided to use the multiple choice option in order to minimize student writing. Four alternatives for each question were used and in some cases three.

Test construction proceeded through several stages. First an outline of content was made, specifying concepts and skills to be tested, on the basis of the analytic program (National Curriculum) for the teaching of Mathematics in each grade level. This was discussed with classroom teachers and changed accordingly. Next the items were written for each test, and these were given again to relevant classroom teachers for inspection for their clarity, representativeness and importance. In this process, some items were discarded, some modified, and others added. Extra care was taken so that the items were grammatically correct, precise, and written in a language suitable to the reading level of the group which they were supposed to address.

The tests were pretested with children in the Greek Embassy School in London. Although some modifications were made to the tests after this initial testing, it was not considered necessary to perform an item analysis on the basis of the responses from this sample for several reasons:

- a) The sample being outside Greece was not considered representative of the target sample.

b) Several children faced problems with the Greek language being partially bilingual; this not only added considerably to the time of administration, but also resulted in many wrong answers which would not be given if language was not an obstacle.

c) The numbers of children in each class were quite small, ranging from 10 to 17.

However, performance on the tests showed a range of correct answers that was deemed to be systematic.

Subsequently, the tests were sample tested in Athens during February 1989. The sample consisted of 144 children. The tests were group administered by the researcher during regular school hours. Item analyses were then made. The validity, difficulty and discrimination indexes for each item were computed. Items with a negative validity index or a very low one (0.20 or less) were discarded. The optimum value of the difficulty index for a four option multiple choice test was considered to be 0.62 (Aiken, 1985). Therefore, items with a difficulty index around 0.62 were chosen. In addition, a few difficult and several easy items were included in each test. Thirty items in each of the three tests (for grades 4, 5, 6) and twenty five items for the grade 3 test, which met the necessary statistical requirements were used to form the revised tests. For the chosen items the functioning of the distractors was also tested and the necessary revisions made.

The tests were sample tested again in Athens, during September 1989 on a different population of students. They were administered to children by their classroom teachers. The sample consisted of 169 children: 47 in grade 6, 50 in grade 5, 33 in grade 4, and 39 in grade 3. On the basis of these results it was decided to discard five more items from each test in order to reduce administration time. Thus, the final form of the tests consisted of 25 items for each of the grades 4, 5 and 6 and 20 items for grade 3.

The values of the validity, difficulty and discrimination indexes for each of the tests are shown in Table 15.

Table 15

Validity, Difficulty and Discrimination Indexes for the Four Math Tests.

Tests	LA Test 1	LA Test 2	LA Test 3	LA Test 4
Grades	3	4	5	6
Validity Index	0.28 - 0.72	0.25 - 0.75	0.28 - 0.64	0.24 - 0.73
Difficulty Index	0.43 - 0.75	0.40 - 0.75	0.40 - 0.82	0.42 - 0.75
Discrimination I.	0.33 - 0.83	0.30 - 0.90	0.35 - 0.78	0.35 - 0.85

The test-retest reliability of the final form of the tests was measured by having fifteen subjects in each grade to take the test on two separate occasions with the space of two weeks between retesting. The retest coefficients (Spearman Rho) ranged from 0.59 - 0.85. The coefficient of 0.59 obtained from third graders although not very high, was considered satisfactory, as testing took place in September, that is, children were going back to school after a long summer holiday, and a fluctuation in test scores was to be expected.

Initially both the teacher ratings and the results of the Math Test were considered as showing the child's relative position in his class. However, on the basis of the high correlations found between the Test scores and the teachers' ratings and the theoretical reasons explained in section 3.6.2.1 (see section 4.4, Chapter 4), it was decided to use teacher ratings as criteria for school achievement.

Chapter 4: Results

4.1 Overview

All statistical analyses in this study were performed with the SPSSx program (1988), except path analysis which was performed with LISREL (Jöreskog and Sörborn, 1986). Appendix 3 lists the means, standard deviations, skewness and kurtosis of each of the variables measured. Completed questionnaires contained almost no missing responses, and the mean response was substituted for the few missing responses that did occur.

The analyses of the results proceeded in several steps:

1. In order to investigate whether Special Class children exhibited significant differences from Regular Class children as regards a) general; b) academic; c) subject specific self-concepts; d) locus of control; and e) self-attributions, the equality of mean scores between groups on all affective variables were tested through a series of MANCOVAs and ANCOVAs.

2. A secondary purpose of this study was to explore the relations:

- a) between achievement and the self constructs;
 - b) between academic self-concepts and the broader dimension of global self-esteem;
- and
- c) the relations between the different facets of self-concept and locus of control/self attributions.

In order to undertake this exploration the Product Moment correlation coefficients were calculated between achievement measures and the affective variables, followed by path analysis. Although the cross-sectional and correlational design of this study makes it unlikely that alternative causal models or even causal predominance could be validly tested, an exploratory or preliminary path model was hypothesized, where the causal ordering of variables was assumed to be, first, achievement, then self-concept and then self attribution.

4.2 Preliminary Analyses :

In preliminary analyses, one-way ANOVAs were used to check differences between groups of Regular Class and Special Class children for the variables of a) age, b) father's occupation and c) achievement measures. The findings were:

a) The mean overall age for Regular Class children was 116.92 months and for Special Class children was 116.94 months. Table 16 presents sample sizes at each grade level, plus age characteristics for the two groups. No significant statistical difference in age was found between the two groups.

Table 16
Age Characteristics in Months of Two Groups by Grade.

Special Class				Regular Class		
grade	n	M	SD	n	M	SD
3	18	99.89	3.50	90	99.27	3.29
4	18	112.39	3.65	87	110.64	3.62
5	19	121.47	5.74	87	122.71	3.43
6	17	134.77	4.13	88	135.46	3.54
total	72	116.94	13.47	352	116.92	14.00

b) The socioeconomic status of subjects was defined on the basis of their father's occupation which was obtained and scored on a 5-point scale with 1 representing semi-skilled and un-skilled (low-status) and 5 representing professional (high-status) occupation (see section 3.3, Chapter 3). No significant difference was observed between the two major groups for socioeconomic status. Special class children had a mean of 2.38 and regular class children a mean of 2.60. From an inspection of the categories it can be seen that groups were drawn predominantly from working and lower middle-class socioeconomic backgrounds.

c) Academic achievement levels in Verbal achievement and Mathematics as measured by teacher grades (on a 5-point scale) and the AL Maths test reflected highly significant

differences between groups with special class children receiving much lower grades on all three measures than regular class children ($F = 155.82$, $df = 1, 422$, $p < .001$ for reading, and $F = 148.57$, $df = 1, 422$, $p < .001$ for mathematics). Means and standard deviations for achievement scores of the two groups as a whole and for each grade separately are presented in Tables 17 and 18.

Table 17
M and SD for the Three Achievement Measures by Group and Grade.

	Regular Class		Special Class	
Grade 3	M	SD	M	SD
Reading	3.689	1.138	1.722	0.669
Maths	3.556	1.123	1.722	0.826
AL Maths Test	10.434	4.867	8.625	4.658
Grade 4				
Reading	3.609	1.049	1.833	0.618
Maths	3.713	1.170	2.222	1.060
AL Maths Test	15.825	5.472	6.250	2.630
Grade 5				
Reading	3.368	1.202	1.895	0.658
Maths	3.414	1.177	1.737	0.562
AL Maths Test	12.031	4.892	5.500	3.536
Grade 6				
Reading	3.682	1.160	1.941	0.827
Maths	3.602	1.180	1.588	0.618
AL Maths Test	13.736	5.921	8.000	0.733

Table 18

M and SD for the Three Achievement Measures by Group.

	Regular Class		Special Class	
	M	SD	M	SD
Reading	3.588	1.141	1.847	0.685
Maths	3.571	1.162	1.819	0.811
AL Maths Test	12.640	5.601	7.563	3.741

In summary, on average, children attending the Special Classes appear similar in age and socioeconomic status background, as measured by father's occupation to children in Regular Classes. However, academic achievement levels reflect highly significant differences between the two groups. Here, as expected, Special Class children have significantly lower grades compared with Regular Class children.

Subsequently, one-way ANOVAs were used to check for differences on the same measures between the three groups, that is, Special Class children (SC), Low (LA) and Normally Achieving (NA) children. Again no significant differences were found between the groups with respect to subjects' age ($F = .830$, $df = 2, 421$, n.s.). Means and standard deviations of the age characteristics in months of the three groups are given in Table 19.

Table 19

Age Characteristics in Months of the Three Groups by Grade.

	SC (n = 72)		LA (n = 79)		NA (n = 273)	
grade	M	SD	M	SD	M	SD
3	99.89	3.50	97.88	3.20	99.57	3.25
4	112.39	3.65	110.65	3.72	110.64	3.61
5	121.47	5.73	122.57	3.20	122.77	3.53
6	134.77	4.13	135.26	4.09	135.54	3.35

However, when the three groups were compared a statistically significant difference was found for father's occupation with Normal Achievers (NA) appearing to be in a higher SES level than the other two groups ($F = 6.41$, $df = 2, 421$, $p < .01$). The means of the three groups were as follows :

Special class (SC): 2.38;

Low achievers (LA): 2.33; and

Normal achievers (NA): 2.67.

An a posteriori Tukey test showed that the differences between NA and both LA and SC groups were significant, but there was no significant difference between the LA and SC groups (Table 20). Father's occupation was then used in subsequent analyses as a covariate when the groups were compared.

Table 20

Tukey Test for Differences between Means on Father's Occupation.

	2 (LA)	1 (SC)	3 (NA)	
2. 2.33	2.33	< 2.38	< 2.67	
1. 2.38		0.05	0.34*	
3. 2.67			0.29*	HSD = 0.29

A one-way analysis of variance indicated that significant differences existed between the three groups on both reading and maths scores ($F = 364.67$ for reading; and $F = 348.07$ for maths with $df = 2, 421$, $p < .001$). An a posteriori comparison using Tukey's HSD test revealed that both Special Class (SC) and Low Achievers (LA) differed significantly from Normally Achieving children (NA) on both measures of achievement at the .05 level. Special Class children did not differ significantly from Low Achievers with respect to reading achievement. An identical pattern is observed for maths achievement scores as well. Means and standard deviations on the two achievement measures for the three groups are given in Table 21 (see also Figures 6a, 6b and 6c).

Table 21

M and SD for Verbal Achievement, Maths and the AL Maths Test for Three Groups.

	SC		LA		NA	
	M	SD	M	SD	M	SD
Reading	1.85	0.685	2.04	0.609	4.04	0.822
Maths	1.82	0.811	1.99	0.670	4.03	0.824

Figure 6a

Verbal Achievement and Maths Achievement Scores in Three Groups.

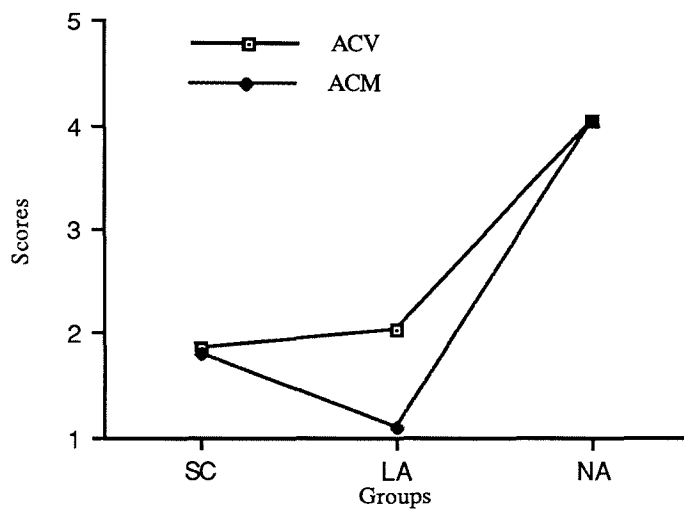


Figure 6b

Verbal Achievement Scores for Boys and Girls in Three Groups.

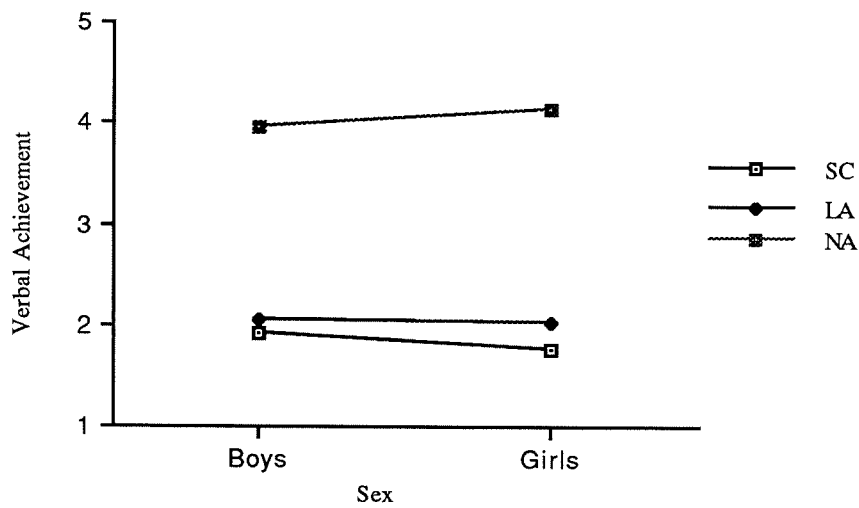
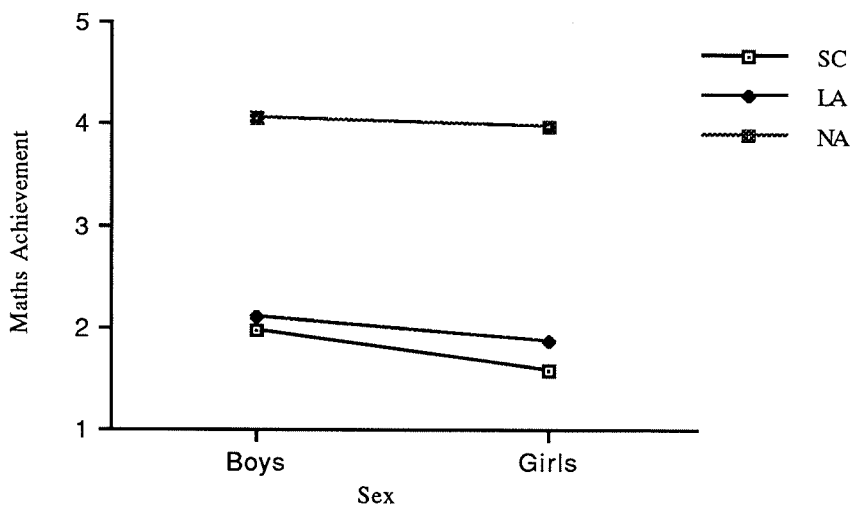


Figure 6c

Maths Achievement Scores for Boys and Girls in Three Groups.



Given that the sample of this study comes from six different schools, before proceeding with further analyses it was considered essential to check whether the school attended had any influence on the affective variables studied. A series of one-way ANOVAs were performed on each of the affective scales. No significant differences were evident. Also no differences were evident as regards achievement measures. The school

attended, then, did not seem to have differential consequences for children in terms of their rated achievement in reading and maths, neither did it appear to be associated with any differences in self-concept and self-attribution measures.

4.3 Group Comparisons:

Groups were firstly compared by multivariate and univariate analyses of covariance. Secondly the relative importance of the four attributional causes within each group was examined by a 3 (group) by 4 (causal category) MANOVA with causal category as a within subject factor.

4.3.1 Between Group Comparisons:

The first group of comparisons contrasted the two major groups, namely, Special (SC) and Regular Class (RC) children, by multivariate analysis of covariance (MANCOVA) using age, sex and father's occupation as covariates. The MANCOVA revealed a significant group effect [Pillai's Trace: $F(12, 408) = 7.49, p < .001$]. The scores of the Special Class children were overall significantly lower than the Regular Class children (Table 22).

Table 22
M and SD on all the Affective Variables in Two Groups.

Variables	Special Class		Regular Class	
	M	SD	M	SD
PCE	9.52	2.93	11.28	2.80
PCA	6.53	1.67	7.25	1.64
PCG	6.65	1.95	7.18	1.80
SDQM	20.59	6.55	24.01	6.16
SDQR	20.09	4.85	22.10	3.75
IAR tot	18.72	4.27	22.58	3.96
I+	10.65	3.29	12.87	2.46
I-	8.13	3.05	9.70	2.95
I+A	3.96	1.61	4.80	1.17
I-A	3.10	1.17	3.20	1.17
I+E	4.01	1.65	4.95	1.10
I-E	3.03	1.87	4.02	1.74

The MANCOVA was followed by univariate analysis of covariance (ANCOVA) which yielded significant group effects for all the affective variables, except I-A (Table 23).

PCE: Perceived Competence Evaluation; **PCA:** Perceived Competence Affect; **PCG:** Global Self-Esteem; **SDQ:** Self Description Questionnaire; **SDQR:** Verbal (Reading) Self-Concept; **SDQM:** Maths Self-Concept; **IAR:** Intellectual Achievement Responsibility Questionnaire; **I+:** Responsibility for Success; **I-:** Responsibility for Failure; **I+A:** Success Ability; **I-A:** Failure Ability; **I+E:** Success Effort; **I-E:** Failure Effort.

Table 23 *(SC and RC)*
Univariate F-Tests with 1, 419 df for Two Groups with Grade, Sex and Father's
Occupation as Covariates.

Variables	F	Probability
PCE	22.66	<.001
PCA	10.42	<.005
PCG	4.80	<.05
SDQM	17.88	<.001
SDQR	13.64	<.001
IARtot	61.31	<.001
I+	41.24	<.001
I-	18.20	<.001
I+A	23.57	<.001
I-A	.72	.397
I+E	34.05	<.001
I-E	20.06	<.001

In order to test whether the differences between groups would remain significant with the effect of varied achievement levels covaried out, another MANCOVA was carried out with reading and maths scores as covariates. The difference between groups remained significant [Pillai's Trace: $F(12, 409) = 2.49, p < .05$]. However the univariate analysis of covariance revealed no significant differences between groups on self-concept scales but significant differences on IAR scales except I-A (Table 24).

Table 24 ^(SC and RC)
Univariate F-Tests with 1,420 df., for Two Groups with Verbal Achievement and Math
Scores as Covariates.

Variables	F	Probability
PCE	.81	.369
PCA	.05	.808
PCG	.70	.403
SDQM	.68	.410
SDQR	.71	.401
IARtot	18.91	<.001
I+	11.18	<.001
I-	6.58	<.05
I+A	12.80	<.001
I-A	1.54	.215
I+E	8.36	<.005
I-E	4.90	<.05

The Special Class children (SC) were then compared with the Regular Class now split into Low (LA) and Normally Achieving (NA) groups. The procedure again consisted of Multivariate analyses of covariance (MANCOVAs) which were conducted using SPSSX procedures with the same covariates (age, sex, father's occupation), as before. Where significant results were obtained, follow-up univariate analyses of covariance (ANCOVAs) were performed on individual variables. Twelve measures were separately subjected to ANCOVA analysis. These differences were then evaluated by using the Tukey Honestly Significant Difference procedure and harmonic means to correct for unequal cell sizes. A significance level of .05 was used for all comparisons. When the three groups were compared using age, sex and father's occupation as covariates, significant differences were evident between groups on both self-concept [Pillai's Trace: $F(10,830) = 5.47, p < .001$] and IAR measures [Pillai's Trace: $F(14,$

826) = 7.36, $p < .001$]. As predicted, the Special Class group had a lower mean score than the other two on all measures. The means and standard deviations of the three groups on all the affective variables are presented in Table 25. Table 26 presents the univariate F-tests with the effects of grade, sex and father's occupation covaried out.

Table 25

M and SD on All the Affective Variables for Three Groups.

	SC (n = 72)		LA (n = 79)		NA (n = 273)	
	M	SD	M	SD	M	SD
PCSCe	9.52	2.93	10.40	2.84	11.50	2.76
PCSCa	6.53	1.67	6.69	1.70	7.37	1.61
PCSCg	6.65	1.95	6.77	1.85	7.28	1.79
SDQM	20.59	6.55	22.69	6.48	24.31	6.06
SDQR	20.09	4.86	19.95	4.76	22.58	3.31
IARt	18.72	4.27	21.83	4.18	22.75	3.89
I+	10.65	3.28	12.15	3.06	13.03	2.27
I-	8.13	3.05	9.51	2.93	9.72	2.96
I+A	3.96	1.61	4.60	1.34	4.80	1.13
I-A	3.10	1.17	3.50	1.12	3.12	1.17
I+E	4.01	1.64	4.61	1.30	5.03	1.04
I-E	3.03	1.87	3.74	1.86	4.08	1.71

Table 26 *(SC, LA and NA)*
Univariate F-Tests with 2, 418 df for Three Groups with Grade, Sex and Father's
Occupation as Covariates.

Variables	F	Probability
PCE	14.85	<.001
PCA	11.10	<.001
PCG	3.61	<.05
SDQM	14.94	<.001
SDQR	13.69	<.001
IARtot	36.47	<.001
I+	25.12	<.001
I-	11.14	<.001
I+A	12.41	<.001
I-A	1.93	.147
I+E	22.08	<.001
I-E	14.44	<.001

The results of the MANCOVA with the effect of reading and maths achievement scores covaried out, indicated no significant differences among the three groups on the self concept scales [Pillai's Trace: $F(10, 832) = 1.27, p = .241$]. The univariate analysis revealed that the groups were significantly differentiated on PCE scale only. In relation to the IAR scales differences between groups remained significant [Pillai's Trace: $F(14, 828) = 2.74, p < .001$]. The univariate analyses showed significant differences on most IAR scales with the exception of I-A and I-E (Table 27).

Table 27 *(SC, LA and NA)*
Univariate F-Tests with 2, 419 df for Three Groups with Verbal Achievement and Math
Scores as Covariates

Variables	F	Probability
PCE	4.82	<.05
PCA	.04	.959
PCG	.35	.705
SDQM	.37	.691
SDQR	.49	.615
IARtot	9.47	<.001
I+	5.83	<.005
I-	3.39	<.05
I+A	6.39	<.005
I-A	1.82	.163
I+E	4.19	<.05
I-E	2.69	.069

Univariate analyses of covariance (ANCOVAs) were then conducted on each individual scale using a 3 x 2 x 4 (group x sex x grade) factorial design with one covariate (father's occupation) kept constant over all occasions, in order to investigate the differences between groups (see section 2.13.1). Results from these analyses will be discussed separately for self concept and IAR scales.

4.3.1.1 Self-concept:

Significant group differences were obtained on all self-concept scales with the expected sequence of NA>LA>SC in each case [Pillai's Trace: $F(10, 792) = 5.16, p < .001$]. There was a significant grade effect on the PCE scale ($F = 5.535, df = 3, 399, p < .001$), and a significant sex difference on the SDQM ($F = 6.991, df = 1, 399,$

$p < .01$). No other significant age, sex or interaction effects were obtained in relation to self-concept scales. The summary of the ANCOVA analysis for all self-concept scales is given in Table 28.

Table 28
ANCOVA Summary Data for Self-Concept Scales.

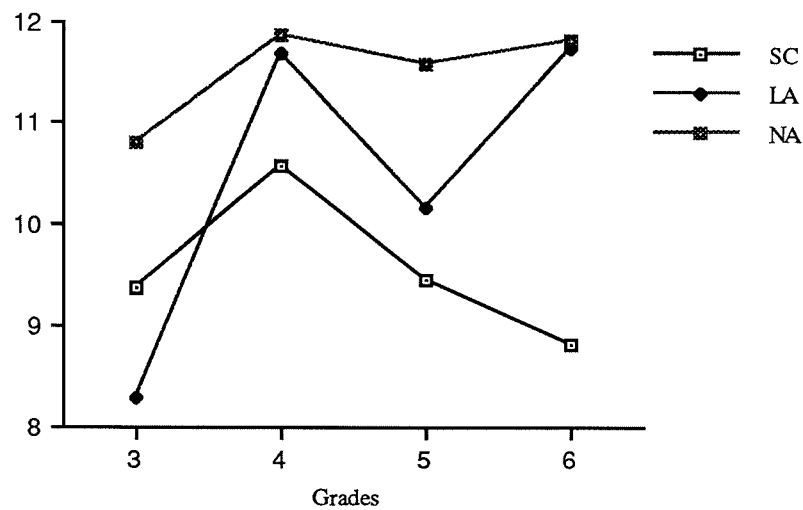
	SC (n = 72)	LA (n = 79)	NA (n = 273)		
	M	M	M	F	P
PCE	9.52	10.56	11.49	15.071	<.01
PCA	6.53	6.67	7.41	10.667	<.01
PCG	6.65	6.91	7.26	3.562	.032
SDQR	20.09	20.62	22.52	13.418	<.01
SDQM	20.59	21.67	24.69	14.712	<.01

Each of the self-concept scales was then subjected to further analysis.

1. On the Perceived Competence Evaluation (PCE) subscale an a posteriori comparison was made using Tukey's HSD test to make all pairwise comparisons between means. The mean scores of SC children were significantly lower than those of the other two groups at the .05 probability level. The difference between low and normally achieving children only marginally reached significance. Then, the grade effects were examined on the same scale. The Tukey Test was again used in order to ascertain where the significant grade effect occurred. The results revealed that the grade effect was due to an increase in self-concept scores from grade 3 to grade 6. However, when the means of each grade were examined separately within each group a different pattern emerged for each group (Figure 7).

Figure 7

Mean scores of group (NA, LA and SC) by grade on PCE.



The scores of normally achieving children remained practically constant; a fluctuation from low to higher self-concept scores was evident in the low achieving group which reached its highest mean score in grade 6, while in the special class group there was a progressive decline after an initial rise in grade 4. The group by grade interaction was not statistically significant. The implications of this set of results as shown in Figure 7 are discussed more fully in Chapter 5. Table 29 presents means and standard deviations on the PCE for each group and Table 30 the ANCOVA summary for the same scale.

Table 29
M and SD of PCE Scores by Grade.

Grades	SC		LA		NA	
	M	SD	M	SD	M	SD
3	9.25	3.55	8.30	2.60	10.78	3.21
4	10.55	2.86	11.65	3.36	11.86	2.47
5	9.44	3.04	10.14	2.46	11.58	2.51
6	8.81	1.96	11.75	2.68	11.83	2.38

Table 30
ANCOVA Summary Data for PCE Self-Concept Scores.

Source	df	MS	F-ratio	Probability
G	2	123.901	16.387	<.001
S	1	6.977	.923	.337
A	3	41.653	5.509	<.001
G x S	2	6.624	.876	.417
G x A	6	14.720	1.947	.072
S x A	3	1.686	.223	.880
G x S x A	6	6.011	.795	.574

G = Group; S = Sex; A = age/grade level

2. On the **Perceived Competence Affect (PCA)** subscale the differences between groups were again significant ($F = 10.667$, $df = 3, 399$, $p < .001$). The a posteriori comparison of the means revealed that, while the Special Class did not differ significantly from the Low Achievers, both these groups obtained significantly lower scores than normally achieving children.

3. In terms of **Global Self-Esteem (PCG)** the only significant effect was that between groups ($F = 3.562$, $df = 2, 399$, $p < .05$). The a posteriori comparisons between means showed that the only difference that barely reached significance at .05 level was that between NA and SC groups. The results of the Tukey HSD test are shown in Table 31.

Table 31
Tukey's HSD Test for PCG scores of three groups.

	1(SC)	2(LA)	3(NA)	
1. 6.65	6.65	< 6.91	< 7.26	
2. 6.91		0.26	0.61*	
3. 7.41			0.35	HSD = 0.61

4. Significant group differences were also evident in relation to **Verbal Self-Concept (SDQR)**, $F = 13.418$, $df = 2,399$, $p < .001$. The Tukey Test revealed that the NA group was significantly different than the other two, while there were no significant differences between SC and LA children.

5. The same pattern of differences was observed in relation to **Math Self-Concept (SDQM)**. The NA group was significantly different from the other two. No significant differences occurred between SC and LA children. Besides the group difference, there was a significant sex effect in respect to SDQM ($F = 6.991$, $df = 1, 399$, $p < .01$) which was due to girls obtaining lower scores than boys. The overall mean for girls was 22.62, whereas for boys it was 24.11. If the mean scores of boys and girls are examined separately within each group it is noticeable that girls consistently obtain lower scores than boys. Tables 32a and 32b presents means and standard deviations on SDQM for each group and Table 33 the ANCOVA summary table for SDQM (see also Figures 8a - 8e).

Table 32a
M and SD for SDQM Scale for Three Groups

	SC		LA		NA	
	M	SD	M	SD	M	SD
boys	21.06	6.04	22.30	6.51	25.50	5.43
girls	19.89	7.28	21.03	7.17	23.75	6.08

Table 32b
M and SD for SDQM Scale for Three Groups by Grade.

grades	SC		LA		NA	
	boys	girls	boys	girls	boys	girls
3	21.79	21.20	22.32	20.60	25.90	23.79
4	21.88	23.12	23.00	23.36	26.57	22.77
5	21.35	17.71	24.21	20.51	25.21	25.42
6	19.45	17.57	20.18	20.16	24.24	22.88

Table 33
ANCOVA Summary Data for SDQM.

Source	df	MS	F ratio	Probability
G	2	544.55	14.712	<.001
S	1	258.741	6.991	<.01
A	3	93.911	2.540	.056
G x S	2	3.110	.084	.919
G x A	6	17.138	.463	.836
S x A	3	4.188	.113	.952
G x S x A	6	42.650	1.152	.331

G = Group; S = Sex; A = Age/Grade level.

Figure 8a

Verbal Self-Concept (SDQR) and Maths Self-Concept (SDQM) in Three Groups.

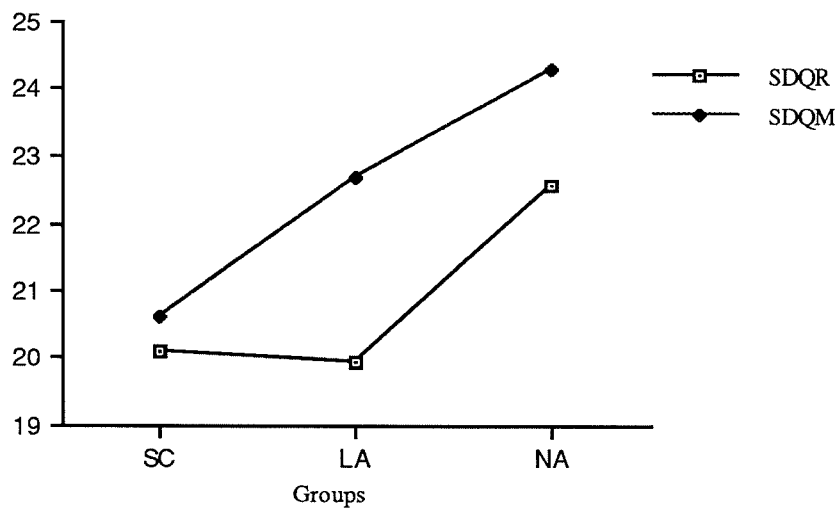


Figure 8b

Verbal Self-Concept Scores (SDQR) in Three Groups by Grade.

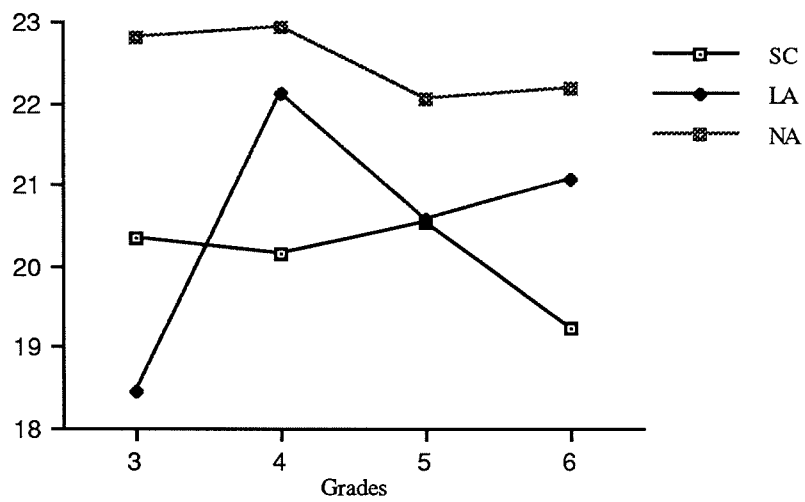
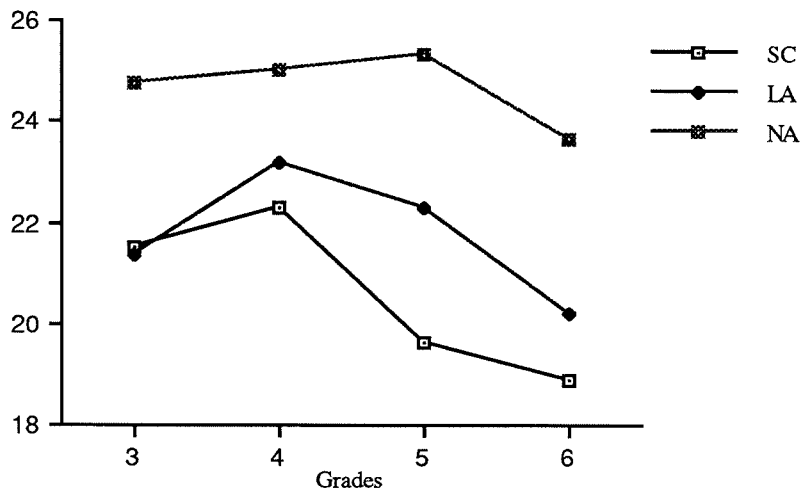


Figure 8c
 Maths Self-Concept Scores in Three Groups by Grade.



4.3.1.2 Locus of Control/Causal Attributions:

For academic locus of control, analyses were performed on total IAR scores, separately on the success (I+) and failure (I-) subscales, and also on each of the subscales attributing success and/or failure outcomes to effort (I+E, I-E) or ability (I+A, I-A).

The MANCOVA with father's occupation as a covariate revealed significant differences between groups [Pillai's Trace: $F(14, 788) = 6.83, p < .001$]. The univariate analysis showed that groups did not differentiate on I-A scale only. For total IAR scores as well as for each individual subscale, except I-A, the NA group obtained a higher mean score than the other two. Table 34 contains ANCOVA summary data for total IAR and subscale scores and Tables 35a, 35b and 35c contain individual means and standard deviations for total IAR and the two subscales, I+ and I-.

Table 34
ANCOVA Summary Data for IAR Scales.

	M (SC)	M (LA)	M (NA)	F	p
IARtotal	18.72	21.56	22.88	36.51	<.001
I+	10.65	12.18	13.07	26.42	<.001
I-	8.13	9.24	9.81	11.36	<.001
I+A	3.96	4.66	4.79	6.26	<.005
I+E	4.01	4.59	5.05	22.31	<.001
I-A	3.10	3.42	3.13	1.80	.166
I-E	3.03	3.58	4.15	14.48	<.001

Table 35a
M and SD for Total IAR and Two Subscale Scores.
IAR Total for Three Groups by Grades

	SC		LA		NA	
Grades	M	SD	M	SD	M	SD
3	17.61	3.87	18.31	2.98	20.47	3.46
4	17.17	4.29	20.47	3.64	22.77	3.65
5	19.74	3.23	22.74	4.64	24.13	3.60
6	20.41	5.03	23.43	3.58	24.51	3.37

Table 35b
I+ Subscale

	SC		LA		NA	
Grades	M	SD	M	SD	M	SD
3	10.39	3.31	9.25	3.82	12.14	2.77
4	10.33	3.55	12.88	1.97	13.14	2.11
5	10.74	2.89	12.70	2.42	13.67	1.71
6	11.18	3.61	13.17	1.83	13.46	2.06

Table 35c
I- Subscale

Grades	SC		LA		NA	
	M	SD	M	SD	M	SD
3	7.67	2.73	10.14	2.60	8.47	2.98
4	6.67	2.83	8.00	3.18	9.98	2.82
5	7.90	2.94	10.18	3.40	10.50	2.94
6	9.58	3.30	10.38	2.51	11.16	2.10

As shown in the ANCOVA summary in Table 36, significant group differences were obtained on **Total IAR** scores $F(2, 399) = 36.51, p < .001$. An a posteriori comparison using Tukey's HSD test revealed that Special Class children (SC) obtained significantly lower scores as compared with the other two groups, thus showing a greater degree of externality. The difference between Low (LA) and Normal (NA) achievers was also significant. A significant grade effect was also evident ($F = 25.62, df = 3, 399, p < .001$) indicating an increase in internal orientation in all three groups (see also Figures 9a and 9b). The ANCOVA summary data for IAR total is presented in Table 36.

Figure 9a
IAR Total Scores by Sex in Three Groups.

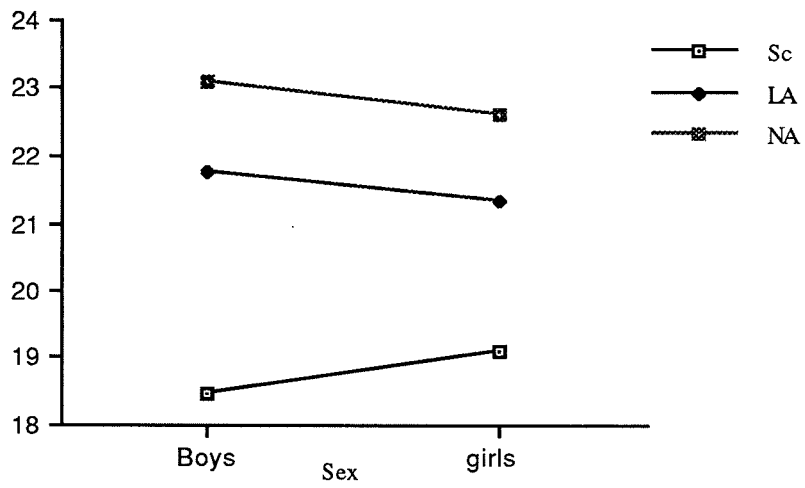


Figure 9b
IAR Total Scores in Three Groups by Grade.

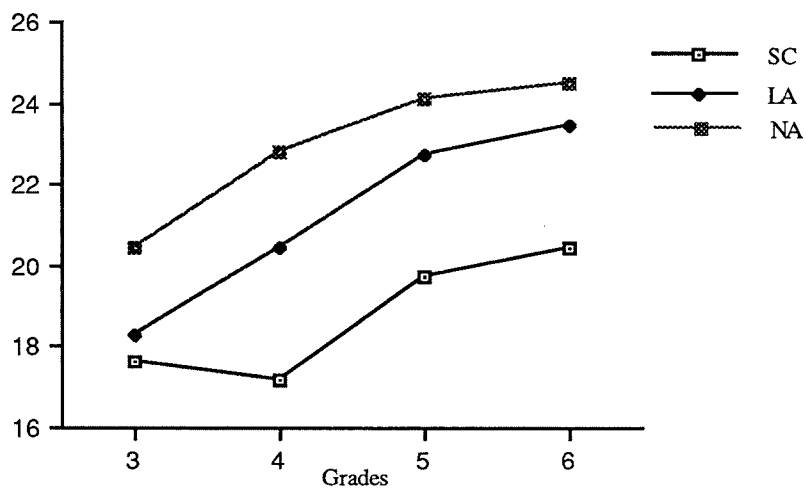


Table 36

ANCOVA Summary Table for IAR Total Scores.

Source	df	MS	F-ratio	Probability
G	2	503.125	36.507	<.001
A	3	353.073	25.619	<.001
S	1	.001	.000	.994
G x A	6	10.788	.783	.584
G x S	2	6.178	.448	.639
A x S	3	4.181	.303	.823
G x A x S	6	3.697	.268	.952

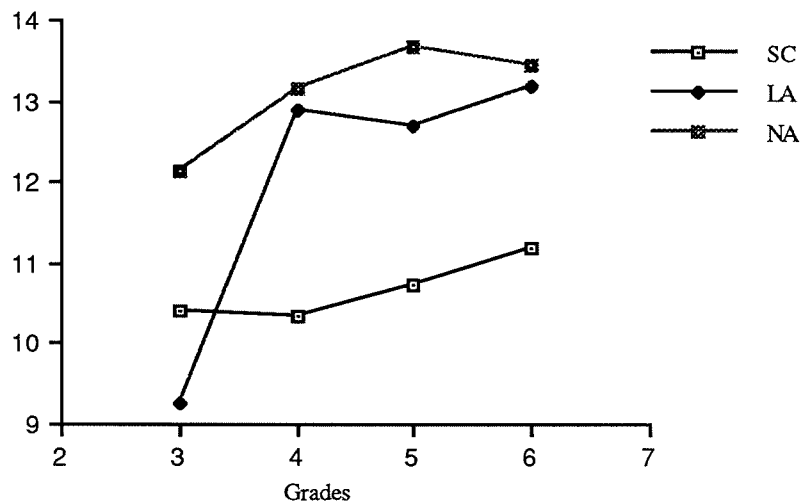
G = Group; S = Sex; A = Age/Grade level.

On the I+ subscale (acceptance of responsibility for success outcomes), there was a significant main effect for group, $F(2, 399) = 26.42, p < .001$, a significant grade effect, $F(3, 399) = 11.29, p < .001$, and a significant group by grade interaction, $F(6, 399) = 2.42, p < .05$. The Tukey's HSD test indicated that there was a significant difference between SC and the other two groups. SC children obtained lower scores on I+, thus showing a tendency to ascribe responsibility for academic successes to external causes. LA group also differed significantly from NA, by obtaining lower scores than the latter.

As the data in Table 35b suggests, the grade effect was due to older children gradually obtaining higher scores on the I+ scale, thus accepting greater responsibility for successful outcomes than did younger children. The group by grade interaction was the result of a considerable fluctuation of mean scores in the LA group (Figure 10). LA children had the lowest mean score compared with the other two groups in grade 3, with a dramatic increase in mean scores at grade 4, while in grade 6 the LA group obtained almost the same mean score ($M = 13.17$) as the NA group ($M = 13.46$).

Figure 10

I+ Mean Scores of the Three Groups (NA, LA, and SC) by Grade.



Results for the I- subscale (responsibility for failures) showed again a significant group effect $F(2, 399) = 11.36, p < .001$. This was caused by SC children reporting fewer internal ascriptions for failure outcomes than did the other two groups. No differences were obtained between LA and NA groups. Thus, low and normal achievers attributed academic failure significantly more to internal factors than did special class children, failing therefore to confirm the hypothesis that there would be no significant differences between groups in relation to internal attributions to failure.

In relation to I+A subscale (ability attributions for success), a significant group effect was obtained, $F(2, 399) = 12.84, p < .001$. This was the result of the SC group obtaining significantly lower scores, thus making fewer ascriptions of success outcomes to ability than the other two groups. No significant differences were observed between the LA and NA groups. In addition to the group effect there was a significant grade effect, $F(3, 399) = 3.77, p < .05$, and a significant group \times sex \times grade interaction, $F(6, 399) = 2.40, p < .05$. Tables 37a, 37b present means and standard deviations of the three groups on I+A and Table 38 the ANCOVA summary data for I+A.

Table 37a

M and SD on I+A Subscale for Three Groups by Grade.

Grades	SC		LA		NA	
	M	SD	M	SD	M	SD
3	3.94	1.80	3.56	1.63	4.59	1.25
4	3.89	1.61	4.88	0.99	4.84	1.10
5	3.79	1.55	4.91	1.24	4.91	1.10
6	4.24	1.60	5.00	0.80	4.85	1.14

Table 37b

M and SD on I+A Subscale for Three Groups by Sex and Grade

Grades	SC		LA		NA	
	Boys	Girls	Boys	Girls	Boys	Girls
3	3.00	4.89	3.00	4.00	4.47	4.70
4	4.08	3.50	4.56	5.25	4.78	4.93
5	4.20	3.33	4.45	5.33	4.85	4.97
6	4.00	4.80	5.15	4.80	4.95	4.70

Table 38

ANCOVA Summary Data for I+A Scores.

Source	df	MS	F-ratio	Probability
G	2	19.329	12.841	<.001
S	1	3.645	2.422	.120
A	3	4.931	3.276	<.05
G x S	2	1.887	1.254	.287
G x A	6	3.025	2.010	.063
S x A	3	2.791	1.854	.137
G x S x A	6	3.614	2.401	<.05

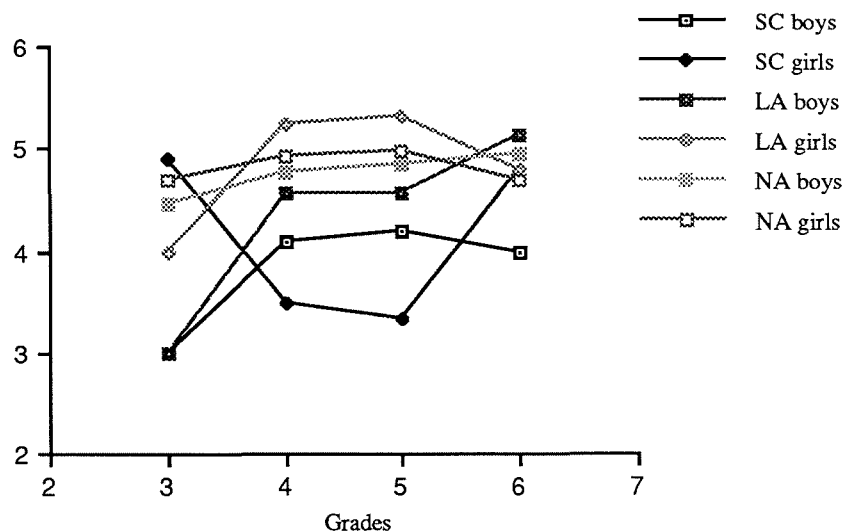
G = Group; S = Sex; A = Age/ Grade level.

An inspection of the data in Table 37b reveals that the grade effect is due to older children obtaining higher scores than the younger ones on I+A subscale. However, this gradual increase is more pronounced in the LA group, where the children's mean scores in grades 4, 5 and 6 were significantly different at the .05 level than those in grade 3. In the other two groups, although older children did obtain higher scores, there were no significant differences between the grades as an a posteriori comparison of grade means revealed.

When the group x grade x sex interaction was considered, a different pattern emerged for each group (Figure 11). At grade 3 level, in all groups, girls tended to make more ascriptions to ability than did boys, thus obtaining higher scores. In the NA group this slight difference continued until grade 6, where the girls had lower scores than boys. The same pattern was observed in the LA group, with more pronounced differences between the sexes. Again girls in grade 6 had slightly lower scores than boys. In the special class (SC), girls had significantly higher scores than boys in grade 3, this was followed by a dramatic drop in scores in grades 4 and 5, and by a substantial rise in grade 6, with their scores, however, remaining significantly lower than those of the grade 6 boys.

Figure 11

I+A Subscale Mean Scores of Groups (NA, LA and SC) by Sex and Grade.



On **I-A** subscale (attributions of ability for failure outcomes) the only significant effect was that for sex ($F = 6.03$, $df = 1$, 399 , $p < .05$). This was due to boys obtaining higher scores ($M = 3.30$) than girls ($M = 3.03$) when the whole sample was considered. When the mean scores of boys and girls were considered separately within each group, this pattern was evidenced only in the LA and NA groups. In the SC group the opposite was true, that is, girls obtained higher scores, thus, they ascribe their failures more to a lack of ability than did boys (Table 39). This finding is discussed more fully in Chapter 5.

Table 39
M and SD on I-A for Three Groups by Sex.

SC				LA			NA		
sex	n	M	SD	n	M	SD	n	M	SD
M	43	2.98	1.12	40	3.60	1.21	147	3.31	1.08
F	29	3.28	1.22	39	3.23	1.11	126	2.91	1.23

In relation to **I+E** subscale (effort attributions for success), there was a significant group effect $F(2, 399) = 22.31$, $p < .001$, due to the NA group obtaining higher scores, thus ascribing success outcomes to effort more than the other two groups. The SC children obtained significantly lower scores from the LA group as well. A significant grade effect was also evident $F(3, 399) = 7.00$, $p < .001$, due to an increase in internal attributions to effort in older children (Table 40).

Table 40
ANCOVA Summary Table for I+E Subscale Scores.

Source	df	MS	F-ratio	Probability
G	2	30.748	22.311	<.001
A	3	9.653	7.004	<.001
S	1	1.008	.732	.393
G x A	6	1.786	1.296	.258
G x S	2	.100	.072	.930
A x S	3	.237	.172	.915
G x A x S	6	1.635	1.186	.313

G = Group; S = Sex; A = Age/Grade level.

Similarly, on I-E subscale (effort attributions for failure), there was a significant group effect $F(2, 399) = 14.48, p < .001$, due to NA group obtaining higher scores than SC group. No significant differences were found either between NA and LA, or between LA and SC groups. A significant grade effect was also evident $F(3, 399) = 9.73, p < .001$, as older children made more effort attributions than younger ones.

4.3.2 Within Group Comparisons:

The relative importance of the four attributional causes (success/ability, success/effort, failure/ability/, failure/effort) was examined by a 3 (group) x 4 (causal category) MANOVA with causal category as a within subject factor. There were significant differences within each group in terms of the causal categories used ($F = 78.66, df = 3, 1263, p < .001$).

A comparison of within-group attributional patterns revealed some similarities between groups in the rank order of importance assigned to each attribution within each group. Children in both LA and NA groups ranked I-A (failure/ability) as the least important cause, while children in the SC group ranked I-E(failure/effort) as the least important

cause. I+E (success/effort) was ranked as the most important cause by children in NA and SC groups. In the LA group both I+A and I+E were considered equally important (Mean score for I+A = 4.66, Mean score for I+E = 4.60).

4.4 Correlational Analysis :

The next analysis investigated the relationships between the different variables in this study by calculating Product-Moment correlation coefficients, followed by path analysis. Correlation coefficients were calculated for the Total Sample (N = 424) and separately for each of the sub-groups, that is, for Regular (RC, n = 352), Normally Achieving (NA, n = 273), Low Achieving (LA, n = 79) and Special Class (SC, n = 72). The intent was to ascertain whether intercorrelations for those variables differed as a function of the group. The correlation matrices for all groups are shown in Appendices 14 to 18.

The sub-group correlations showed far fewer significant relations than those for the total sample as would be expected from the reduced sample sizes. A wide variation in the magnitudes of the correlations across subgroups was also notable. This may be taken as further evidence of the differences existing between groups.

Sex appeared uncorrelated with any of the variables except I-A ($r = 0.17$) in RC and NA groups in which a significant negative correlation between the two variables appeared. Grade level was significantly correlated to IAR and subscales in RC, NA and LA groups ($r = 0.14$ to 0.39); Only the I-A subscale did not correlate significantly with grade level in any of the groups. There were no correlations between grade level and IAR scales in SC group.

The correlations between the two achievement measures for maths were considered in Regular Class (RC) only, given that very few children in Special Class (SC) have taken the LA Math Test. Correlations between the two achievement measures were positive and highly significant. Correlation coefficients for the LA Math Test and Maths Achievement Score for each of the four grades in RC are shown in Table 41 below.

Table 41
Pearson's Product-Moment Correlations between Math Scores and the LA Math Test in
Regular Class (RC).

Grades	n	r
3	83	0.70**
4	40	0.59**
5	65	0.71**
6	87	0.69**

** significant at .001 level

On the basis of the high correlations observed between the two achievement measures it was decided to consider teachers' scores as satisfactorily reliable and to base further analysis on them only. This decision was taken partly as a result of the fact that not all the children in the sample had a score on the Math Test and partly on the basis of the argument presented in section 3.6.2.1.

In accordance with typical findings, correlations between achievement measures were strong in RC and NA groups. Reading scores appeared highly related to Math scores at .001 level ($r = 0.68 - 0.81$) in Regular Class and Normally Achieving children. There was a weaker but still significant relationship at .01 level between these measures in the Special Group ($r = 0.36$) but no such correlations existed in Low Achieving Group (LA).

Achievement measures showed low but significant positive correlations to father's occupation in the RC and NA groups ($r = 0.23$ to 0.27) but no such correlations were evident in SC and LA groups. When the total sample was considered, father's occupation appeared significantly correlated with both Verbal ($r = 0.24$) and Math score ($r = 0.24$).

Correlations between self concept scales and achievement measures generally supported the predicted relations. Both achievement measures were significantly correlated with specific academic self-concepts (SDQM, SDQR) and the general academic self-concept

scales (PCE, PCA) when the total sample and the RC were considered. More specifically maths achievement scores were more highly correlated ($r = 0.18$ to 0.36) with maths self-concept (SDQM), while verbal achievement scores were more highly correlated ($r = 0.26$ to 0.31) with Verbal self-concept (SDQR) rather than the other academic self-concepts. In NA group the only significant correlation was between SDQM and Maths score ($r = 0.26$). These correlations appeared very low and insignificant, although still in the predicted direction in Special Group. In LA group there were significant positive correlations between subject-specific self-concepts and the corresponding area of achievement (for example SDQR correlated significantly with Verbal achievement score ($r = 0.32$), but correlations between subject -specific self-concepts and the other achievement measure were nonsignificant and negative. The two general academic self-concept scales (PCE and PCA) showed persistent positive correlations with the achievement measures ranging from $r = 0.19$ to 0.36 (Tables 42a, 42b) in Regular Class children and in the NA group, but in the Special Group and LA group were very low and nonsignificant. There was also a negative correlation between PCA and Verbal Achievement in both LA and SC groups ($r = -0.01$ - 0.15).

Table 42a

Pearson's Product Moment Correlations between Two Achievement Measures and Academic Self-Concept Scales in Total Sample and Regular Class.

	Total Sample		Regular Class	
	Read.sc.	Math sc.	Read.sc.	Math sc.
PCE	0.34**	0.36**	0.29**	0.22
PCA	0.25**	0.30**	0.24**	0.13
SDQR	0.31**	0.23**	0.26**	0.14
SDQM	0.26**	0.36**	0.20*	0.18

** significant at .001 level, * significant at .01 level.

Table 42b

Pearson's Product Moment Correlations Between Two Achievement Measures and Academic Self-Concept Scales in NA, LA and SC groups.

	NA		LA		SC	
	Read.sc.	Math sc.	Read sc.	Math sc.	Read.sc.	Math sc.
PCE	0.08	0.30**	0.21	0.29	0.07	0.22
PCA	0.19*	0.22**	- 0.01	0.15	- 0.15	0.13
SDQR	0.11	0.05	0.32*	- 0.06	0.29	0.14
SDQM	0.15	0.26**	- 0.18	0.29	0.06	0.18

** significant at .001 level, * significant at .01 level.

Both subscales PCE and PCA were substantially correlated with SDQ reading and SDQ Maths self-concept scales in all groups ($r = 0.29$ to 0.45). Moreover, there were significant positive correlations between the four academic self-concept scales and the general self-concept as measured by PCG in all groups with the strongest correlations appearing in SC group.

General self-concept as measured by PCG appears unrelated to achievement measures in all groups. These correlations were particularly low in comparison with correlations reported in the literature (Tables 43a, 43b).

Table 43a

Pearson's Product Moment Correlations Between General Academic (PCE, PCA), Subject Specific Self-Concepts (SDQR, SDQM) and Global Self-Esteem (PCG) in Total Sample and Regular Class.

	Total Sample		Regular Class	
	SDQR	SDQM	SDQR	SDQM
PCE	0.32**	0.36**	0.29**	0.30**
PCA	0.42**	0.34**	0.42**	0.29**
PCG	0.28**	0.20**	0.26**	0.15*

** significant at .001 level., * significant at .01 level.

Table 43b

Pearson's Product Moment Correlations Between General Academic (PCE, PCA) Subject Specific (SDQR, SDQM) and Global Self-Esteem (PCG) in NA, LA and SC groups.

	NA		LA		SC	
	SDQR	SDQM	SDQR	SDQM	SDQR	SDQM
PCE	0.25**	0.22**	0.31*	0.43**	0.33*	0.45**
PCA	0.42**	0.23**	0.36**	0.33**	0.35*	0.46**
PCG	0.25**	0.13	0.25	0.14	0.30	0.37*

**significant at .001 level, * significant at .01 level.

In respect of the Intellectual Achievement Responsibility Questionnaire (IAR), relations will be examined among the various subscales first, then the relations between IAR subscales and achievement measures and finally those between self-concept measures and IAR subscales.

The subscales measuring acceptance of responsibility for success outcomes (I+, I+A, I+E) were highly correlated among themselves ($r = 0.41$ to 0.81), and the same was true for the subscales measuring responsibility for failure outcomes (I-, I-A, I-E, $r = 0.24$ to 0.83). This is in accordance with the findings of Crandall et al. (1965) and other researchers. All the subscales were strongly correlated with the IARtotal ($r = 0.42$ to 0.77). There were no significant correlations between failure and success subscales; these correlations were either very low or negative.

IAR total scores and I+ subscale appeared moderately correlated to achievement measures in the Total sample and the Regular Class group ($r = 0.22$ to 0.32), while they were very low in NA and LA groups. Correlations between achievement measures and I- were very low and negative in RC, NA and LA groups, while they appeared low but significant when the whole group is considered ($r = 0.16$). In relation to the Special Class, the picture is reversed. Correlations between total IAR scores and achievement measures are insignificant, there were almost no relations between achievement measures and I+, while there was a substantial correlation between the Verbal

Achievement measure and I- ($r = 0.35$). Therefore, it seems that special class children accept responsibility for their failures but not for their successes attributing them to external factors (Tables 44a, 44b).

Table 44a

Pearson's Product Moment Correlations between IAR Subscales and Achievement Measures in Total Sample and Regular Class.

	Total Sample		Regular Class	
	Read.sc.	Math sc.	Read sc.	Math sc.
IAR tot	0.31**	0.32**	0.15*	0.20**
I+	0.30**	0.32**	0.22**	0.24**
I-	0.16**	0.16*	0.04	0.08
I+A	0.15*	0.17*	0.05	0.09
I+E	0.29**	0.31**	0.22**	0.23**
I-A	- 0.04	- 0.03	- 0.10	- 0.09
I-E	0.21**	0.22**	0.10	0.15*

** significant at .001 level, * significant at .01 level.

Table 44b

Pearson's Product Moment Correlations between IAR Subscales and Achievement Measures in NA, LA and SC group.

	NA		LA		SC	
	Read. sc.	Math sc.	Read. sc.	Math sc.	Read. sc.	Math sc.
IAR	0.09	0.10	0.03	0.30*	0.24	0.06
I+	0.16*	0.19*	0.18	0.21	- 0.02	0.06
I-	- 0.00	- 0.02	0.12	0.20	0.35*	0.03
I+A	- 0.01	0.05	0.20	0.14	- 0.03	- 0.05
I+E	0.14	0.12	0.12	0.26	0.01	0.16
I-A	- 0.04	- 0.04	- 0.08	0.09	0.25	0.17
I-E	0.02	0.04	- 0.09	0.22	0.31*	0.01

** significant at .001 level, * significant at .01 level.

Correlations between achievement measures and success/ability attributions were moderately significant only when the total sample was considered; no significant correlations were evident in any of the other groups; moreover, in the special group the existent very low correlations were negative.

Correlations between achievement measures and ability attributions for failure outcomes were very low and/or negative for Regular Class, NA and LA groups ($r = -0.09$ to 0.10). Correlations between the same measures, although still insignificant for the Special Class, were positive and stronger than those in the other groups ($r = 0.17$ to 0.25). As a whole, however, children seem unwilling to attribute their failures to lack of ability.

When correlations between self concept scales and IAR scales were examined a general pattern emerged. Academic self concept, as measured by the two general and two specific self-concept scales, was positively related to attributions of ability and effort in success situations and negatively related to attributions of ability and effort in failure situations. This was generally true for all groups.

The stronger correlations were those between PCE, I+ and I+E. This suggests that a general tendency to attribute responsibility for successful outcomes to effort was related to higher academic self-concept. Strong positive correlations were evident between SDQR, SDQM and I+E in Special Class (SC), while in Normally Achieving group (NA) the same self-concept scales correlated significantly with I+A. In Low Achieving group (LA) there was a significant positive correlation ($r = 0.43$, $p < .001$) between SDQR and I-A.

Correlations between global self worth (PCG) and IAR subscales were on the whole non-significant. The only significant correlation was in the Special Class between PCG and I+A ($r = 0.33$, $P < .01$).

4.5 Path Analysis:

Path analysis has been used to study patterns of relationships and causations among a set of variables. As emphasized by Pedhazur (1982), path analysis is not a method of discovering causes, but a method for interpreting relationships and exploring causal links between variables derived from a causal model which is formulated by the researcher on the basis of knowledge and theoretical considerations. The method may be also used for decomposing correlations among variables, thereby enhancing the interpretation of relations. Within a given causal model it is possible to determine what part of a correlation between two variables is due to the direct effect of a cause and what part is due to indirect effects.

The validity of the method, however, rests on a set of very restrictive assumptions which are that:

- 1) The variables are measured without error;
- 2) The residuals are not intercorrelated;
- 3) The relations among the variables in the model are linear, additive and causal;
- 4) The causal flow is unidirectional (if recursive causal model is assumed); and
- 5) The variables are measured on an interval scale (Kerlinger and Pedhazur, 1973)

As these assumptions are rarely if ever met, especially in non-experimental research other methods than the analysis of causal models have been developed. These are generally referred to as structural equation models and are considered methodologically superior to other causal modeling techniques for two reasons pertinent to this study:

- 1) No assumption of error-free measurement is made with respect to the indicator variables; and
- 2) Measurement errors are allowed to correlate over time.

Model estimation involves a statistical search for a set of values for unknown parameters that imply a covariance matrix equivalent to the observed covariance matrix. The more closely the implied covariance matrix resembles the observed covariance matrix the better the overall fit of the model. There are a number of procedures available for estimation. Maximum likelihood estimation is used most frequently (Hoyle, 1991).

The most widely used computer program for model estimation is LISREL (Linear Structural Relations; Jöreskog and Sörbom, 1986).

LISREL is a general computer program for estimating the unknown coefficients in a set of linear structural equations. The variables in the equation system may be either directly observed variables or unmeasured latent variables which are not observed but related to observed variables. It consists of two parts : The measurement model and the structural equation model.

a) The structural equation model refers to relations among exogenous (variables whose variability is assumed to be determined by causes outside the causal model) and endogenous variables (variables whose variation can be explained by exogenous or endogenous variables within the system).

b) The measurement model specifies the relations between unobserved and observed or latent and manifest variables.

The general model involves four kinds of variables in addition to the three error matrices (ζ , ε and δ), namely y-variables, x-variables (observed variables); and η and ξ variables (latent variables). The three equations by which the general model is defined are the following :

Structural Equation Model : $\eta = B\eta + \Gamma\xi + \zeta$

Measurement Model for y : $y = \Lambda_y\eta + \varepsilon$

Measurement Model for x : $x = \Lambda_x\xi + \delta$

The model is based on the following assumptions:

- 1) ζ is uncorrelated with ξ ;
- 2) ε is uncorrelated with η ;
- 3) δ is uncorrelated with ξ ;
- 4) ζ , ε and δ are mutually uncorrelated;
- 5) The matrix B (which contains the direct effects of each η on other η s) has zeros in the diagonal and (I-B) is non-singular (Jöreskog and Sörbom, 1986).

When only x and y variables are specified, as is the case in this study, the model adopted is a structural model for directly observed variables, and the computer program

assumes the submodel : $y = By + \Gamma x + \zeta$, where B represents the coefficients of y -variables on y -variables; Γ represents the coefficients of x -variables on y -variables and ζ is the residual.

This structural equation model is practically the path analysis model. In fact, path analysis can be seen as a special case of the covariance structure model in which the unobserved latent factors are absent.

LISREL estimates the best fit of the chosen model to the data set and expresses it as a set of regression coefficients, one for each path of the model. In this first stage presumptive causal relations that are found to be statistically non-significant can be deleted so that the model can fit a data set more efficiently. It also allows the assessment of the overall fit or the detection of lack of fit of the model. This can be done by examining the results of the analysis, that is, looking for unreasonable values in the parameter estimates, standard errors, squared multiple correlations, coefficients of determination and correlations of parameter estimates. Examples of such unreasonable values in the parameter estimates are negative variances, correlations that are larger than one in magnitude, covariance or correlation matrices which are not positive definite. Other indications of a bad model are squared multiple correlations or coefficients of determination which are negative, standard errors which are extremely large or parameter estimates which are correlated very highly (Jöreskog and Sörbom, 1986). If any of the above quantities has an unreasonable value, this is an indication that the model is nearly non-identified and that some parameters cannot be determined from the data.

LISREL gives squared multiple correlations for each observed variable separately and coefficients of determination for all the observed variables jointly. It also gives squared multiple correlations for each structural equation and coefficients of determination for all structured equations jointly. The squared multiple correlation is a measure of the strength of the relationship, and the coefficient of determination is a measure of the strength of several relationships jointly.

In relation to the second part of the model evaluation concerning the assessment of the goodness-of-fit of the whole model, there is lack of consensus among theorists concerning how best to evaluate the extent to which a proposed model accounts for a set of observed variances and covariances. There are those who propose indexes that gauge the absolute fit of a model (Mulaik et al., 1989) and others who suggest that comparative indexes can be used to check the comparative fit of a model when compared with alternative models (Bentler, 1990).

The most frequently used index of absolute fit is an approximation of the chi-square statistic and its associated degrees of freedom and probability level. Large chi-square values are considered to correspond to bad fit and small chi-square values to good fit. The degrees of freedom serve as a standard by which to judge whether the chi-square value is large or small. Because the goal of estimation is to produce a model that implies a covariance matrix that is minimally different from the population covariance matrix, the desired outcome is to fail to reject the null hypothesis that the covariance matrix implied by the proposed model is the same as the population covariance matrix (Hoyle, 1991). However, while failure to reject the null hypothesis may be taken as an indication that the model is consistent with the data, alternative models might be equally consistent with the data. Moreover, because of extraneous influences on the magnitude of chi-square approximation, such as sample size and the number of parameters, it has been proposed (Jöreskog, 1977; Bentler and Bonett, 1980) that a strict interpretation of the chi-square generated by model estimation should be abandoned and the results should be examined very cautiously in the light of other measures of overall fit such as the residuals and the modification indices.

The other two measures of overall fit are the goodness-of-fit index (GFI) or the adjusted goodness-of-fit index (AGFI) and the root mean square residual (RMR). The goodness-of-fit (GFI) is a measure of the relative amount of variances and covariances jointly accounted for by the model. Unlike χ^2 , GFI is independent of the sample size and relatively robust against departures from normality. However, its statistical distribution is unknown so there is no standard to compare it with. The root mean

square residual (RMR) is a measure of the average of the residual variances and covariances. It can be used to compare the fit of two different models for the same data. LISREL VI (Jöreskog and Sörborn, 1986), which is based on maximum likelihood (ML) statistical theory was used in this study in an exploratory fashion to examine causal relationships between achievement measures and self-related constructs, namely, self-concept and locus of control. The submodel adopted was a structural model for directly observed variables which is expressed in the following equation :

$$y = By + \Gamma x + \zeta. \quad (\text{Equation 4})$$

The following four matrices only were considered in this analysis :

- 1) Beta (B): The matrix of coefficients of the effects of endogenous variables on endogenous variables.
- 2) Gamma (Γ): The matrix of coefficients of the effects of exogenous variables on endogenous variables.
- 3) Phi (Φ): The variance-covariance matrix of the exogenous variables.
- 4) Psi (Ψ): The variance-covariance matrix of the residuals.

The elements of these matrices may be of three kinds: Fixed parameters that have been assigned given values; constrained parameters that are unknown but equal to one or more other parameters; and free parameters that are unknown and not constrained to be equal to any other parameter (Jöreskog and Sörborn, 1986).

4.5.1 Basic Design of Path Analysis Model:

The causal model selected for analysis is shown in Figure 12. This model is a recursive one, that is, the causal flow of influences between variables in the model is unidirectional. The dependent variables (y-variables) are ordered causally in relation to the independent or exogenous variables (x-variables), and the direction of causality is from left to right.

Figure 12

Path Diagram of a Theoretical Model to Account for the Relationships between Academic Achievement (ACV, ACM), Academic Self-Concepts (SDQR, SDQM, PCE, PCA), Global Self-Esteem (PCG) and Locus of Control (I+, I-).

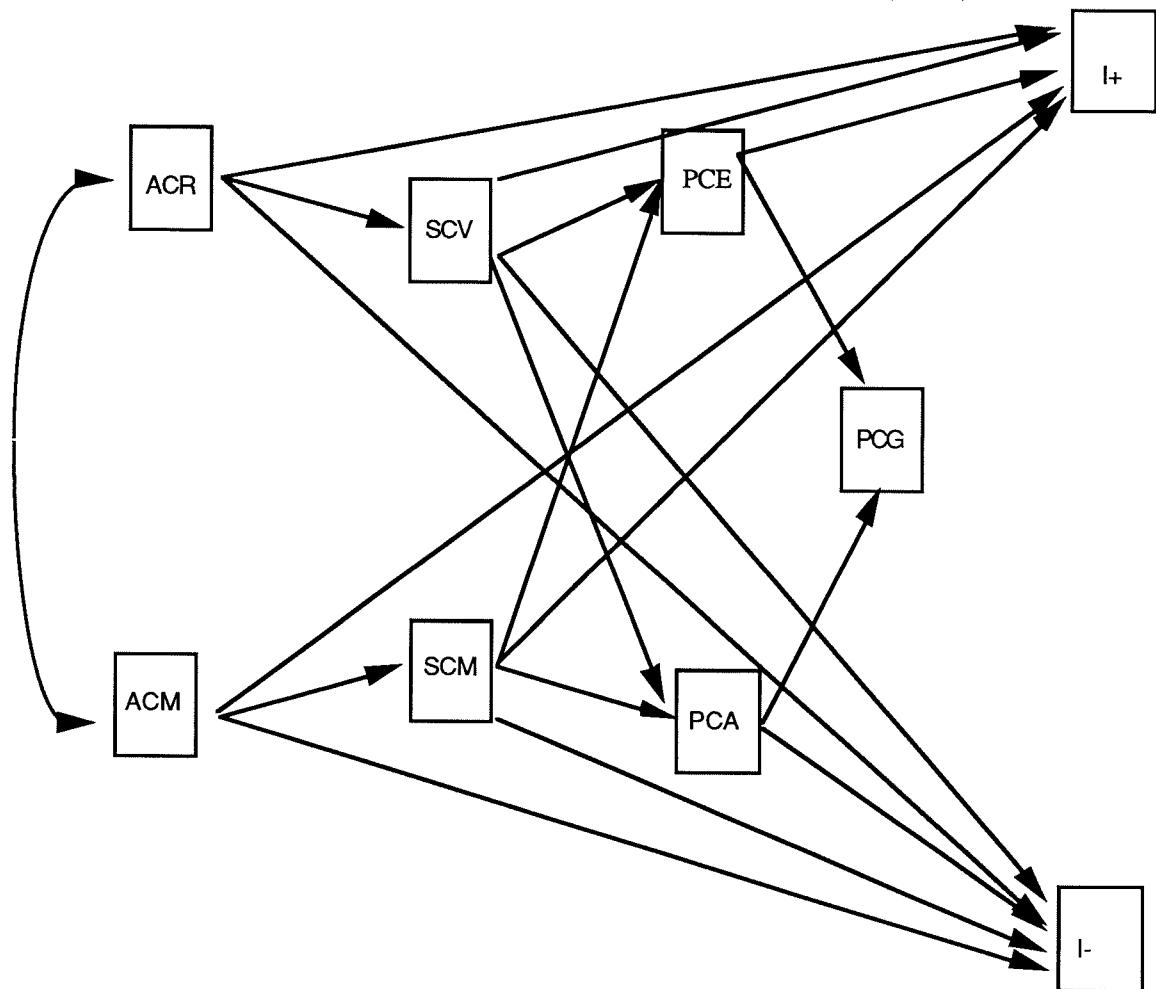


Figure 12 is a schematic representation of the causal model used in this study, hypothesized to account for the relationships between achievement measures and self-related constructs. The theoretical underpinnings of the model are derived from findings reported for both between and within network studies. This model is based on the theoretical formulation of the researcher, and it is not assumed to be the only one to fit the data, given that a large number of possible models could be generated from the relationships among nine variables. The causal ordering underlying the variables in this model is consistent with similar models testing causal predominance. It is particularly

based on a model proposed by Marsh (1984, 1990a). The present model, however, although in general agreement with Marsh in that it assumes that the causal ordering of variables is in the first place achievement, then self-concept and then self-attribution, differs in two important ways :

- 1) Marsh (1984) examined the relationships between achievement, specific academic self-concepts (Verbal and Maths self-concept) and effort/ability attributions. In the present study the model was augmented with the inclusion of the two self-concept scales of perceived competence (PCE and PCA) which were taken as measures of general academic self-concept, and the inclusion of PCG measuring global self-esteem.
- 2) Instead of the effort/ability attributions used by Marsh, the model proposed in this study focused on internality/externality, using the two subscales of IAR, [I+ (measuring acceptance of responsibility for successes) and I- (measuring acceptance of responsibility for failures)].

General hypotheses concerning the relationships between achievement measures and the affective variables were drawn in chapter 2 (section 2.13.2). Now these connections can be specified more precisely :

- 1) It was hypothesized that the child's actual achievement level as measured by teacher ratings in verbal and maths areas of achievement would influence specific academic self-concepts (SDQR and SDQM).
- 2) It was further assumed that achievement and particular self-concepts (SDQR and SDQM) would affect the child's competence evaluation which in turn influences his affective reaction. High levels of achievement would lead to positive evaluation of one's competence (PCE) as well as to positive feelings about one's competence (PCA). Conversely a low level of achievement would lead to a negative competence evaluation and negative affective reaction towards one's competence.
- 3) Both these components of perceived competence (PCE and PCA) were then assumed to influence global self-esteem (PCG).

4) Achievement was also postulated to influence the child's relative internality level and his perception of control. High achievement would result in more internal orientation, while low achievement would lead to external attributions of control.

5) Lastly, it was assumed that academic self-concept as measured by SDQR, SDQM, PCE and PCA would play a mediating role between achievement and locus of control.

This model is in accordance with the dominant assumptions in the literature, even though an increasing number of researchers argue that achievement, self-concept and self attributions influence each other in a reciprocal manner. Here, it was accepted that even if this reciprocal influence exists, the predominant direction of causality, at least in middle childhood, is from achievement to self-concept to perceptions of control.

The boxes in Figure 12 represent the measurements in the respective variables. The straight arrows are regression coefficients representing the hypothesized causal relationships between the variables; these reflect the strength of each causal path. The curved arrow represents the correlational relationship between the two achievement measures.

4.5.2 Inclusion of variables :

One of the crucial elements in the construction of the model is the procedure of inclusion and exclusion of variables. These decisions were made on the basis of the performance and reliability of each variable including its conceptual importance and correlations with other variables. Various categorical variables, such as sex, grade level and father's occupation were not included. Also group variables were not included as predictors but were used to subdivide the sample for separate analyses based on the groups themselves. It was decided that the 'Regular Class' sample ($n = 352$) should serve as the base sample for comparisons.

The total assembly of variables used in the analysis together with the abbreviations used in the model is presented below :

Exogenous variables :

- a) Verbal Achievement Score (ACV)
- b) Maths score (ACM)

Endogenous variables :

- a) Perceived Competence Evaluation (PCE)
- b) Perceived Competence Affect (PCA)
- c) Global Self Esteem (PCG)
- d) Verbal Self-Concept (SDQR)
- e) Maths Self-Concept (SDQM)
- f) Acceptance of Responsibility for Successes (I+)
- g) Acceptance of Responsibility for Failures (I-)

Once the variables to be used were established, the correlations were compiled. The correlation matrices used as the database for analysis are presented in Appendices 14 to 18.

4.5.3 Goals of the model testing :

The goals of the model testing of this exploratory analysis were twofold :

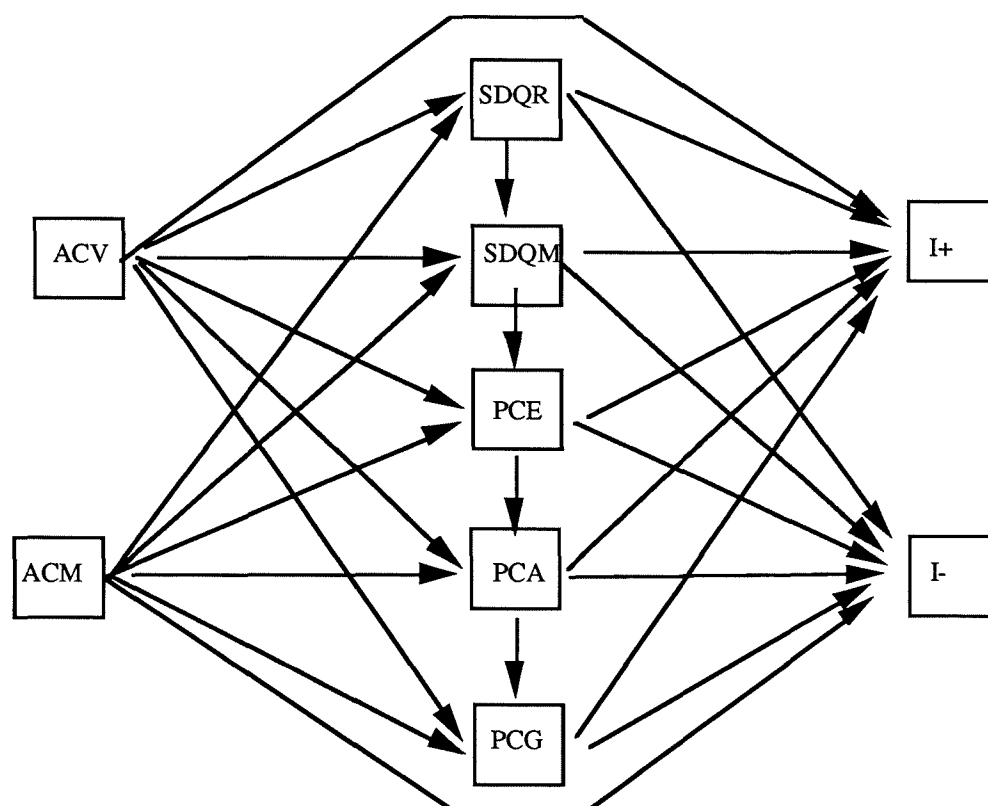
- a) To test the relative goodness of fit of the conceptual model and to modify it in order to achieve an acceptable statistical fit; and
- b) to examine model differences between the NA, LA and SC groups using the data from these subsamples.

4.5.4 Assessing the Path Model :

The model building strategy of this study began by specifying a just identified recursive path model with all paths present (Figure 13, Model 1). A just identified model is one

in which the number of equations is equal to the number of parameters being estimated, hence providing a unique solution for each of them (Pedhazur, 1982). Fully recursive models, such as the one in Figure 13, are just identified as a result of the restrictions imposed on the data. One such restriction is the unidirectionality of the causal flow, that is path coefficients from a given endogenous variable to its causes as well as between an endogenous to an upward endogenous variable are assumed to be equal to zero. Another constraint that is necessary to render a fully recursive model just identified concerns the assumptions that residuals are not correlated among themselves.

Figure 13 (Model 1)
A Path Diagram of a Saturated Model with All Paths Present.



In Figure 13 exogenous variables are shown to the left, all others are endogenous variables. The modelling procedure was concerned with finding the most parsimonious

model, one in which variances in the endogenous variables were accounted for as fully as possible by the exogenous variables or other endogenous variables.

Four analyses were conducted; one for the Regular Class (RC) sample (n = 352); one for Normally Achieving children (NA, n = 273); one for Low Achieving children (LA, n = 79); and one for Special Class children (SC, n = 72). Table 45 presents measures of goodness of fit of the final models for each of the four groups, and Table 46 presents the total coefficient of determination and the squared multiple correlations for each of the y-variables in the model. It should be noted that the squared multiple correlations indicate the reliability of each individual construct, while the total coefficient of determination is a generalized measure of reliability for the whole measurement model (Jöreskog and Sörborn, 1986, p. iii.ii). All weights are based on the maximum likelihood solution.

Table 45

Measures of Goodness of Fit of Final Models for Four Groups.

Group	χ^2	df	Pr. level	GFI	AGFI	RMR	TCD
RC	24.06	18	0.153	0.985	0.962	0.035	0.24
NA	28.43	22	0.162	0.977	0.953	0.055	0.13
LA	30.92	24	0.156	0.924	0.857	0.087	0.32
SC	25.70	26	0.480	0.928	0.875	0.104	0.19

GFI = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit Index; RMR = Root Mean Square Residual; TCD = Total Coefficient of Determination.

Table 46

Total Coefficient of Determination (TCD) and Squared Multiple Correlations for Each Construct in the Final Models of the Four Groups.

Groups	Squared Multiple Correlations							
	TCD	SDQR	SDQM	PCE	PCA	PCG	I+	I-
RC	0.24	0.06	0.16	0.18	0.28	0.14	0.16	0.03
NA	0.13	0.01	0.01	0.15	0.24	0.15	0.11	0.04
LA	0.32	0.10	0.19	0.27	0.21	0.8	0.15	0.14
SC	0.19	0.08	0.44	0.20	0.21	0.26	0.24	0.12

First, the modelling procedure followed for the Regular Class sample will be presented in detail and then the results and the final models for each subsample will be discussed separately.

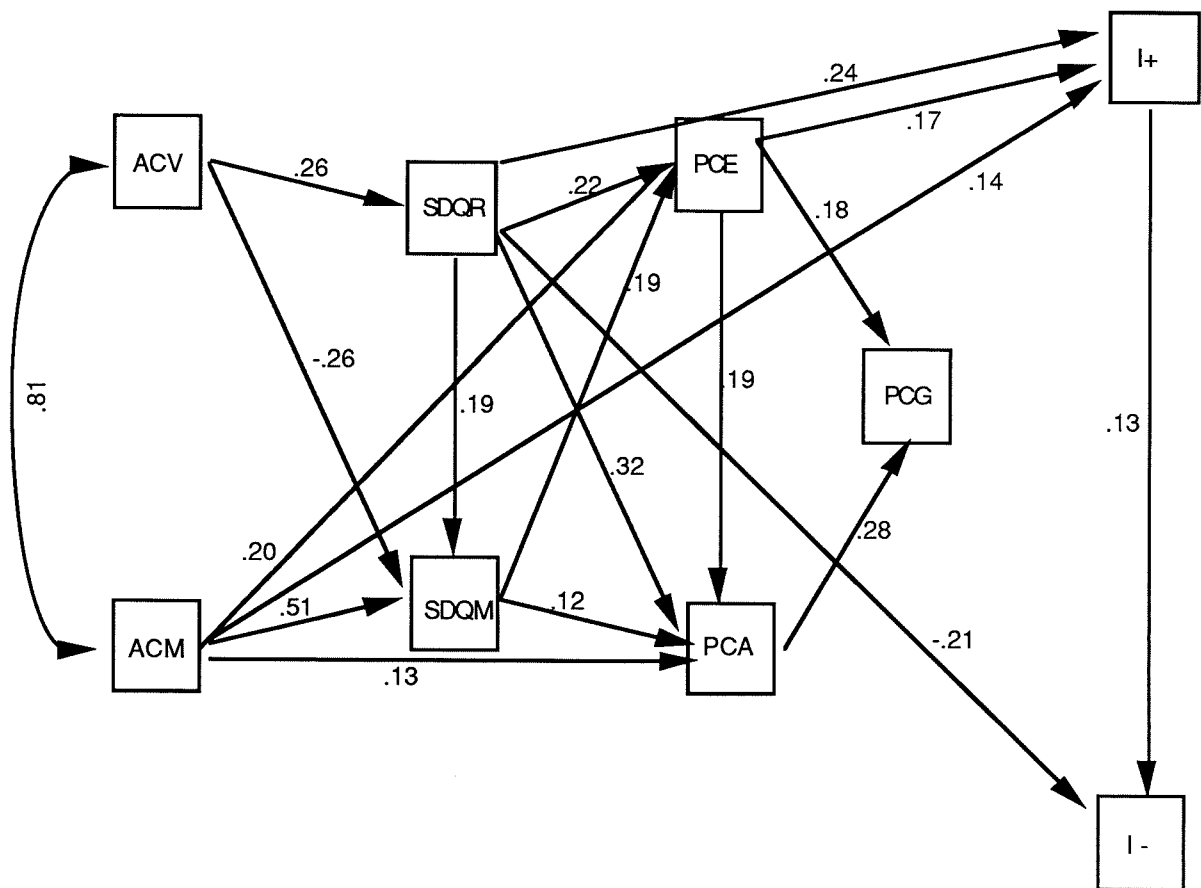
4.5.5 Regular Class Sample :

The modelling procedure began by specifying a just identified recursive path model (Figure 13, Model 1). Because the model was just identified, the χ^2 was zero and the degrees of freedom were also zero. Such a model cannot be tested for significance. The next step involved the inspection of Beta and Gamma coefficients. By deleting coefficients with non-significant t-values (<2.0) an overidentified model could be obtained. Therefore, coefficients with significant t-values (>2.0) were set free, while all others were fixed to zero. As a result of these constraints certain paths were deleted from the model. When the modification indices were inspected in the resulting model (Model 1a), it was found that the values between AchM - PCE and AchR - PCE in the Gamma matrix were too high. Since on theoretical grounds too these paths are likely to exist, it was decided to set free the coefficient AchM - PCE first. Results in Model 1b revealed that in the modification indices the coefficient AchM - I+ was too high. As a consequence in the next model (Figure 14, Model 1c) this coefficient was set free, and

the model was tested once more. This last model was considered to be the one which best shows the predictive relationships between the achievement measures and the affective variables.

Figure 14 (Model 1c)

A Path Model Relating Academic Achievement (ACV, ACM), Academic Self-Concepts (SDQR, SDQM, PCE, PCA), Global Self-Esteem (PCG) and Locus of Control (I+, I-) in Regular Class Group (n = 352).



4.5.5.1 Overall Findings for Model 1c :

Model 1c is presented in Figure 14. The causal effects move from left to right as indicated by straight arrows and are summarized by path coefficients. Only statistically significant paths were retained in the model. The curved line between the two achievement measures represent relations between these two variables where no causal

ordering is hypothesized and is summarized by Pearson's correlation coefficient. The measures of goodness of fit for models 1a - 1c are presented in Table 47 below.

Table 47

Measures of Goodness of Fit for the Regular Class (n = 352).

Model	χ^2	df	Prob. Lev	GFI	AGFI	RMSR	TCD
1a	40.57	19	0.003	0.975	0.941	0.057	0.192
1b	25.66	18	0.108	0.984	0.960	0.038	0.224
1c	18.40	17	0.364	0.988	0.969	0.027	0.239

GFI = Goodness of Fit Index; AGFI = Adjusted goodness of Fit Index; RMSR = Root Mean Square Residual; TCD = Total Coefficient of Determination.

The goodness of fit for Model 2c was 0.988 adjusted to 0.969. The root mean square residual (RMSR) was 0.027, $\chi^2 = 18.40$, $df = 17$, $p = .364$, which indicates that the fit of the model is good. Total percentage of variance explained by the model was 23.9%. This result may indicate that other variables not included in the model predict much of the variance in self constructs. At the level of individual structural equations, the results were as follows :

For SDQR, $R^2 = 0.068$;

SDQM, $R^2 = 0.163$;

PCE, $R^2 = 0.184$;

PCA, $R^2 = 0.280$;

PCG, $R^2 = 0.145$;

I+, $R^2 = 0.159$; and

I-, $R^2 = 0.047$.

Among the endogenous variables the Perceived Competence Affect (PCA) and the Perceived Competence Evaluation (PCE) were the most dominant in the model in terms of percentage of variance explained (28% and 18.4% respectively). Maths self-concept

(SDQM, 16.3%), Responsibility for successes (I+, 15.9%) and global self-esteem (PCG, 14.5%) had only a small part of their variance explained by the model.

At the level of specific variable to variable predictions, concerning the relation of exogenous-endogenous variables, the direct effects of 'maths achievement' on 'maths self-concept' and 'verbal achievement' on 'verbal self-concept' were positive and significant as predicted. The path coefficient between ACM and SDQM was the highest in the model (0.51). There was no significant effect of 'maths achievement' on 'verbal self-concept', but there was a significant negative path from 'verbal achievement' to 'maths self-concept' (- 0.26) in accordance with previous findings (Marsh, 1986c).

There were significant direct effects, although low in magnitude, from 'maths achievement' to PCE (ACM - PCE = 0.20) and to PCA (ACM - PCA = 0.13). No such direct paths existed between Verbal Achievement and the two competence measures but there were significant indirect effects through the verbal and maths self-concepts. Achievement measures had no direct effects on general self-concept as predicted. No direct effects of achievement on locus of control were found. There was only one significant path from AchM to I+, low in magnitude (0.14).

Among the endogenous variables the path coefficients were again of moderate to small magnitude. There were significant paths from specific self-concepts (SDQR and SDQM) to both PCE and PCA. The highest path coefficient was between SDQR and PCA (0.32). There was also a significant path between PCE and PCA (0.19). The only significant paths to have an impact on global self-esteem (PCG) were those from PCE and PCA as predicted (PCE to PCG = 0.18, PCA to PCG = 0.28).

SDQR had a significant direct effect on both locus of control measures, but while the path SDQR to I+ was positive (0.17), the path between SDQR and I- was negative (- 0.21) in line with predictions that a positive self-concept is related to acceptance of responsibility for success but not failure. The only other direct effect between self-concept and locus of control constructs was that between PCE and I+ (0.24). Finally there was a significant path between I+ and I- (0.13). A closer examination of these results and their implications will be found in the Discussion section.

4.5.6 Analysis of Sub-Groups :

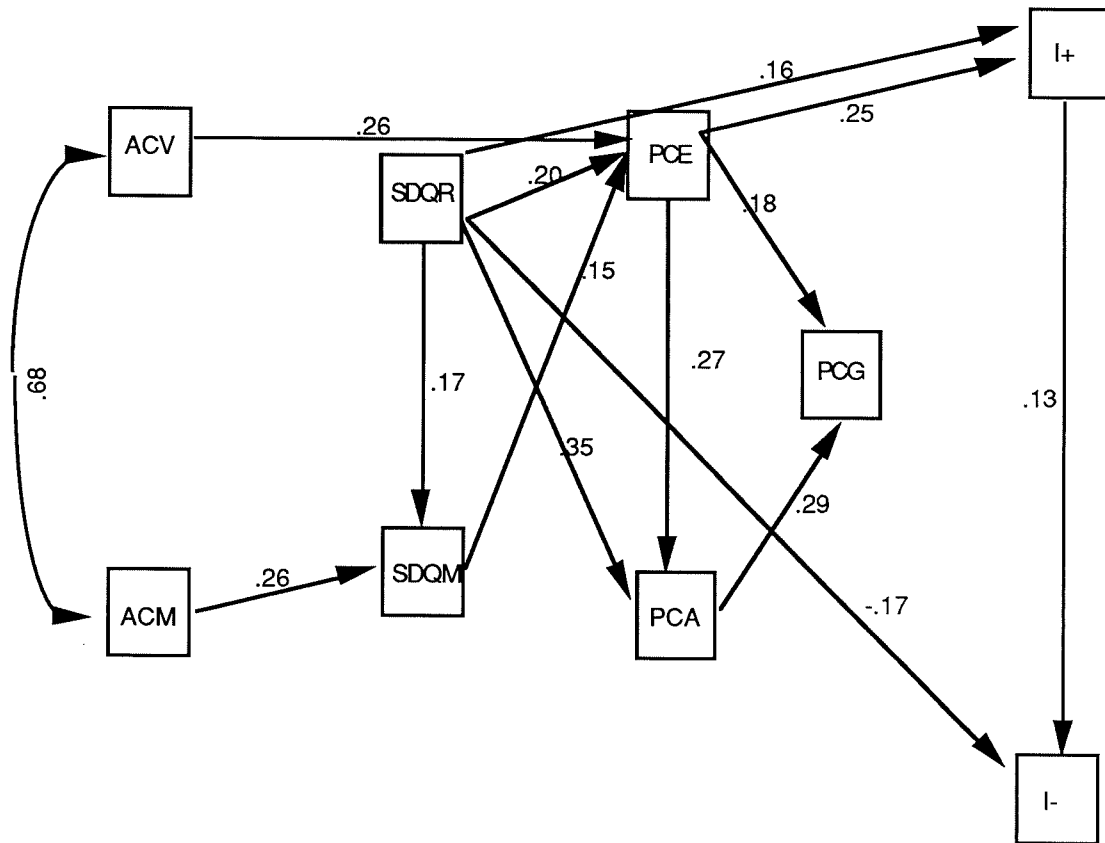
Based on Model 1, three more path analyses were conducted, one for each of the three sub-groups, that is, Normally Achieving (NA), Low Achieving (LA) and Special Class Group (SC) children. The analyses were conducted by using the same modelling procedures as before. The results and the final models will be discussed for each group separately.

4.5.6.1 Normally Achieving Group (NA) :

Model 2 (Figure 15) is the best fitting model for the NA group ($n = 273$). The goodness of fit index for model 3 was 0.977, adjusted to 0.953. The root mean square residual was 0.055, $\chi^2 = 28.43$, $df = 22$, $p = 0.162$, which indicates a satisfactory fit. The total coefficient of determination is 0.131, therefore a very small percentage of variance in the total model was accounted for. Among the several domains, Perceived Competence Affect (PCA) was the best explained facet (24.1%). Perceived Competence Evaluation (PCE) and global self-esteem (PCG) have 14.9% and 14.8% of their variance explained. For both subject specific self-concepts the percentage of variance accounted for by the model was almost zero ($SDQR = 0.0$; $SDQM = 0.09$), which was again an unexpected finding.

Figure 15 (Model 2)

A Path Model Relating Academic Achievement (ACV, ACM), Academic Self-Concepts (SDQR, SDQM, PCE, PCA), Global Self-Esteem (PCG) and Locus of Control (I+, I-) in Normally Achieving group (NA, n = 273).



Concerning the relations exogenous-endogenous variables, the only significant paths from achievement measures were the paths ACM to SDQM (0.25) and ACV to PCE (0.26) which were of small magnitude. There were no direct paths between achievement measures and either I+ or I- scales. Also there was no direct path between ACV and SDQR.

Among the endogenous variables the path with the highest magnitude was between SDQR and PCA (0.35), while all the other paths were of positive but low magnitude. Again the path between SDQR and I- was negative (- 0.17). Both subject specific self-concepts (SDQR and SDQM) had a direct effect on Perceived Competence Evaluation (PCE) but only SDQR had a direct effect on PCA. The effect of SDQM on PCA was

indirect through the path PCE to PCA (0.27). The only direct effects on global self-esteem (PCG) came from PCE and PCA.

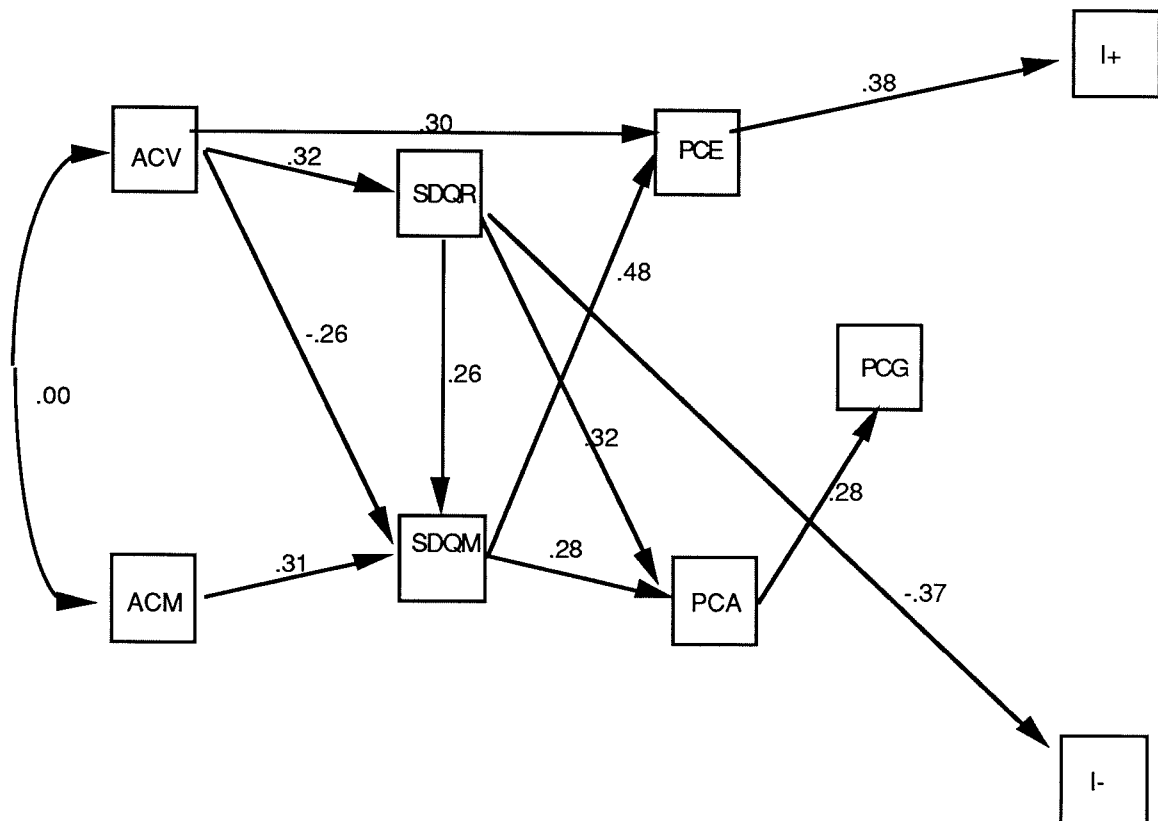
I+ was predicted directly by PCE (0.25) and SDQR (0.16). I- was directly predicted by SDQR (- 0.17) and as stated above the path between the two was negative. There was also a significant path between I+ - I- (0.13). Therefore, there were no direct influences of academic achievement on the locus of control measures but only indirect through PCE.

4.5.6.2 Low Achieving Group (LA) :

Model 3 (Figure 16) was the best fitting model for the LA group. The χ^2 value with 24 df was 30.92, goodness of fit index was 0.924, adjusted to 0.857, and the root mean square residual was 0.087. The χ^2 value with its associated degrees of freedom, the probability level ($p = 0.156$), and the low residual indices indicated that model 6 has achieved an adequate fit to the data.

Figure 16 (Model 3)

A Path Model relating Academic Achievement (ACV, ACM), Academic Self-Concepts (SDQR, SDQM, PCE, PCA), Global Self-Esteem (PCG) and Locus of Control (I+, I-) in Low Achieving Group (LA, n = 79).



Total coefficient of determination was 0.315, showing that 31.5% of variance was explained by the model. Perceived Competence Evaluation (PCE) and Perceived Competence Affect (PCA) were the two constructs whose variance is best explained by the model (27.2% and 20.9% respectively). The amount of variance accounted for by the model for global self-esteem, on the other hand, was almost zero (0.079).

As can be seen from Model 3 the direct effects of Verbal Achievement (ACV) on SDQR and Maths Achievement on SDQM were positive and substantial (ACV to SDQR = 0.31; ACM to SDQM = 0.32). The direct effect of verbal achievement on SDQM was negative and significant (- 0.26) in accordance with Marsh's findings (1986c). There was no significant path between ACM and SDQR. PCE was significantly related to

SDQR (0.30) and SDQM (0.48). There were no direct effects of achievement measures on I+ and I-.

Among the endogenous variables, there were substantial direct effects between SDQM and the two Perceived Competence scales (SDQM to PCE = 0.48; SDQM to PCA = 0.28). SDQR had a substantial direct effect on PCA only (SDQR - PCA = 0.32).

Global self-esteem appeared indirectly influenced by academic achievement through academic self-concepts. The only significant direct path on PCG was from Perceived Competence Affect (PCA to PCG = 0.28).

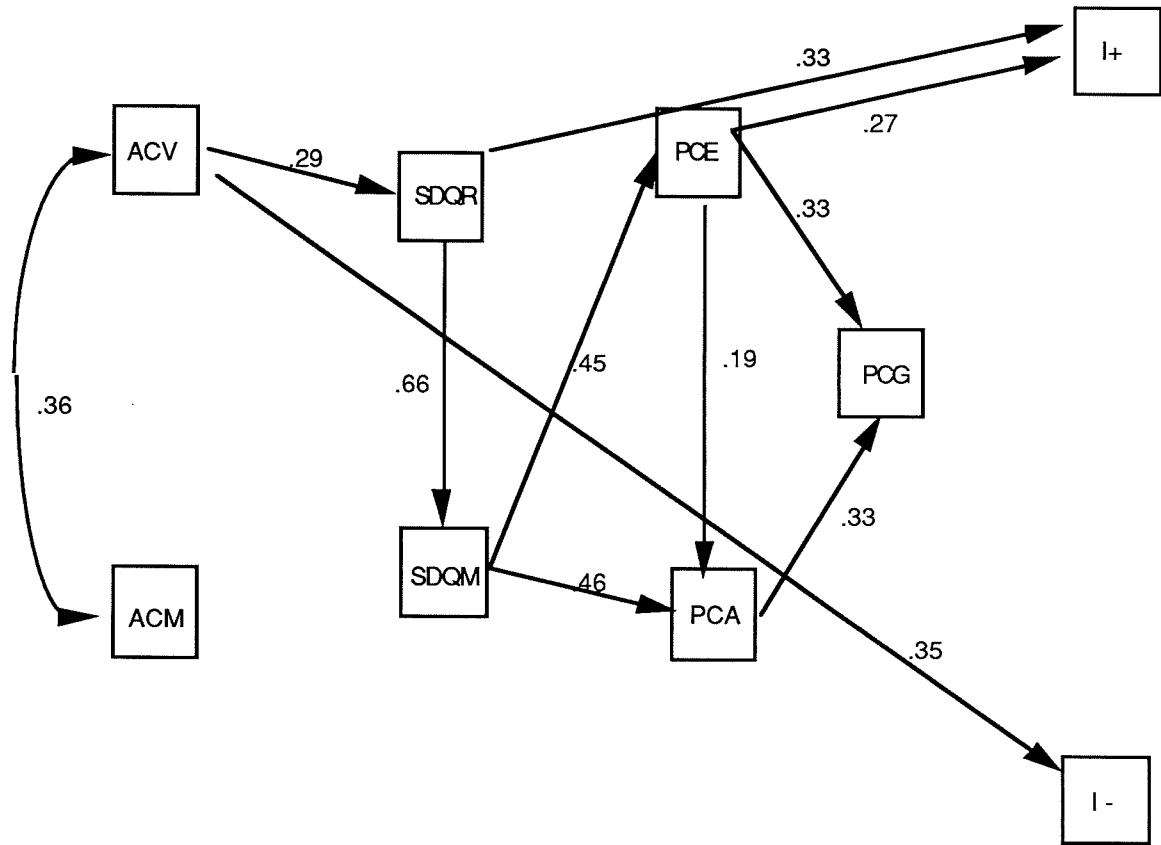
Locus of control scales appeared indirectly influenced by achievement measures through academic self-concepts. The only direct predictor for I+ was PCE (PCE to I+ = 0.38), while for I- the only direct influence came from SDQR. The path SDQR to I- was negative as in the other models (- 0.37).

4.5.6.3 Special Class Group (SC) :

The best fitting model for this group was Model 4 (Figure 17), with $\chi^2 = 25.70$, df 26, probability level $p = 0.480$. The goodness of fit index was 0.928, adjusted to 0.875 and root mean square residual was 0.104. This indicated a good fit of the model to the data.

Figure 17 (Model 4)

A Path Model Relating Academic Achievement (ACV, ACM), Academic Self-Concepts (SDQR, SDQM, PCE, PCA), Global Self-Esteem (PCG) and Locus of Control (I+, I-) in Special Class Group (SC, n = 72).



Total coefficient of determination for the seven structural equations was 0.188. At the level of individual structural equations, the results were as follows:

for SDQR, $R^2 = 0.084$;

SDQM, $R^2 = 0.436$;

PCE, $R^2 = 0.203$;

PCA, $R^2 = 0.212$;

PCG, $R^2 = 0.258$;

I+, $R^2 = 0.240$; and

I-, $R^2 = 0.123$.

Verbal achievement had a substantial direct effect on SDQR (0.29), but there was no such effect from maths achievement on SDQM. SDQR appeared the best single predictor of SDQM (0.66). Therefore, while there were no direct paths between achievement measures and SDQM, the influence of achievement on SDQM was indirect through SDQR.

There were significant direct paths from SDQM to both Perceived Competence scales; the path between SDQM and PCE was 0.45, and the path SDQM to PCA was 0.46. No such effects were evident between SDQR and the Perceived Competence constructs. Both PCE and PCA were important predictors of global self-esteem (0.33). There were no other direct paths on PCG. It can be seen that again the influence of achievement on global self-esteem was through the academic self-concepts.

I+ was directly influenced by SDQR (0.33) and PCE (0.27). In addition there was a significant direct path between ACV and I- (0.35), which in contrast to findings from other models was positive. The path between I+ and I- found in the other models was not significant for SC group, therefore the two subscales appear completely unrelated.

Chapter 5: Discussion :

5.1 Overview:

The hypotheses of this study focused upon four general areas: i) comparative differences between groups in relation to self-concept and locus of control/causal ascriptions; ii) developmental differences across grades; iii) sex differences; and iv) relationships between the affective variables and academic achievement. The discussion section will proceed by examining each of these areas separately. First the findings of the preliminary analyses will be discussed. This will be followed by a discussion of group differences on self-concept and locus of control/causal attributions. Subsequently age and sex differences will be examined and finally the pattern of interrelations among variables will be discussed according to the findings from both correlational and path analyses.

In the last section of this chapter the educational significance of the present study will be considered, along with its limitations and possible directions for future research.

5.2 Preliminary Findings:

Results from the one-way analyses of variance (ANOVAs) showed that the two groups (RC and SC) did not differ in terms of age, distribution of sex and father's occupation. However, significant differences between groups appeared in relation to achievement measures. Equally significant differences in relation to achievement measures were found when the three groups (NA, LA and SC) were compared with both LA and SC groups obtaining lower scores on achievement measures than the NA group. It should be noted that LA did not differ from SC group on achievement measures. This is particularly important in light of the differences found among the two groups on the affective variables.

Correlational analyses showed significant correlations between father's occupation and achievement measures in RC group. This is in agreement with the international literature which emphasizes the relatively strong effects of SES on school achievement. A number of research studies undertaken in Greece point in the same direction (Dragonas, 1983; Flouris, 1989; Kassotakis, 1981; Kefala, 1981; Papakostantinou, 1981; Persinakis, 1975).

Persinakis (1975) found that children's mean achievement scores at school were directly related to father's occupation. Similarly Kassotakis (1981) pointed out that the higher the family income the better the children's mean achievement scores in all subjects. The moderate correlations found in this study ($r = 0.24$ to 0.27) are in agreement with the findings by Dragonas (1983) and Flouris (1989). Flouris (1989) with a sample of 781 10 - 12 year old children found correlations ranging from $.20$ to $.22$ between father's occupation and achievement in reading and maths. Dragonas (1983) using a sample of 1500 eleven and twelve year old children found correlation coefficients ranging between 0.24 to 0.40 between teacher marks and SES (as measured by father's occupation and father's education). She argues that since academic achievement in Greece has been of great general value in all socioeconomic levels one might expect only moderate correlations between achievement measures and SES indices. On the other hand, the fact that in the SC group no significant correlations appeared between the two achievement measures and fathers' occupation probably implies that the learning difficulties of these children are unrelated to their fathers' socioeconomic status.

Correlations between father's occupation and scores on the self-concept and locus of control/causal attributions were not significant. This finding is in accordance with results from other studies (e.g. Rosenberg, 1979) which found no association between social class and self-concept among 8 - 11 year olds, a modest association among adolescents and a somewhat stronger one among adults. The lack of relationship between social status and self-concept in middle childhood is probably explained by the fact that children at this age are seldom exposed to class-related social experiences.

Issues surrounding social class may not be as important at this stage as they are later in life particularly if children grow up in a relatively homogeneous social environment. As Rosenberg (1979) pointed out, the individuals in the environment of the school-age child and the ones most likely to affect child's self-concept are usually of the same social standing as the child.

The variable of socioeconomic level, as measured in this study by father's occupation, was used as a covariate in the analyses of group comparisons, therefore any differences among groups due to its influence were reduced.

5.3 Group Comparisons:

The results of the analyses of covariance provided fairly solid evidence confirming the central prediction of this study that Special Class children (SC) hold generally more negative self concepts and they were more external in their locus of control than Normally Achieving (NA) children. SC children obtained lower scores on almost all measures as compared with the NA group. The only exception was the I-A scale on which the two groups did not differentiate, implying that children were unwilling to attribute their failures to lack of ability irrespective of the group to which they belonged. In the sections below the differences between groups will be discussed separately for self-concept and locus of control.

5.3.1 Self-Concept Scales:

The results of the two initial MANCOVA analyses with age, sex and father's occupation as covariates in the first, and Reading and Math scores as covariates in the second provided an early indication of the between group differences. Significant group differences were found both between the two groups (RC and SC) and between the three groups (NA, LA and SC) on all self-concept scales when age, sex and father's

occupation were used as covariates. However, when Reading and Math scores were used as covariates the differences between groups remained significant on PCE only. For global self-esteem (PCG) the prediction that there would be no differences between SC and RC children was not supported. On the contrary, significant differences existed between the two groups. This finding is discrepant from a) other studies reporting no differences between learning disabled and normally achieving students on global self-esteem (Chapman and Boersma, 1980; Kistner et al., 1987; Pearl and Bryan, 1982), and b) the theorizing which indicates that children failing in their academic work, may be able to derive more positive indications about their self-worth from other areas (Bloom, 1976). It has been argued (Cooley and Ayres, 1988) that differences between learning disabled and normally achieving children on measures of global self-esteem may be due to the fact that such scales contain items referring to academic achievement and that if these items are removed the differences between groups disappear. However, the scale used in this study to measure global self-esteem (PCG) contains items referring only to general aspects of self. Harter (1989) and Kistner et al. (1987) who used the same scale in their studies, in contrast to the results of the present study, found no differences between learning disabled and normally achieving children on global self-esteem. Results similar to the findings of this study have been reported by Greca and Stone (1990). They found that fourth to sixth grade LD children had more negative self-perceptions and lower feelings of global self-worth when compared with Normally Achieving peers; when compared with Low Achieving students they seemed to attain the same scores on all self-concept scales except the Cognitive Competence Evaluation (PCE).

It is speculated that the emphasis put on academic achievement in Greek society makes it a particularly important aspect by which children judge their self-worth, and this seems more pronounced in SC group by adversely influencing their overall evaluations of themselves.

When the three groups were compared on PCG, the only significant difference was that between SC and NA groups, while SC and LA as well as LA and NA groups did not

differ significantly. These findings were augmented by the results of correlational and path analyses. Correlational analysis indicated substantial correlations between global self-esteem and academic self-concepts in SC and NA groups. The stronger correlations and the more significant path coefficients found in SC imply that although school experiences and achievement levels may be relatively independent of general self-perceptions and evaluations for Low and Normally achieving children, this is not the case for Special Class children. These children seem to generalize their feelings of inadequacy in the academic sphere to their general evaluation of themselves. It has been suggested that a possible way of protecting self-esteem against the systematic experience of academic failure is the devaluation of the school and schoolwork and hence education in general. But devaluation of the school and academic work runs counter to traditional value orientation in the Greek culture. Therefore, it would be difficult if not impossible for SC children to make use of this self-protective mechanism. Another strategy for handling challenges to the self in one domain (e.g. academic) is to seek out positive information about the self in another domain. Again such a strategy may not be successful in the case of the present sample as the Greek educational system focuses on the basic academic subjects, minimizing the compensatory role of positive self-perceptions in non-academic domains.

Turning to academic self-concepts, the two groups differed again significantly with SC children obtaining much lower scores than RC children. When the three groups were compared on the PCE, it was found that SC children scored significantly lower than the other two groups, while the difference between NA and LA groups barely reached significance. Thus it seems that while the achievement levels of SC and LA groups were equivalent, their perception of their cognitive competence was different, with SC children experiencing more negative self-perceptions compared with the LA group.

On PCA, the pattern of differences between the three groups was slightly different. Both SC and LA differed significantly from the NA group, while SC and LA did not differ among themselves. Thus, children in both these groups (SC and LA) held

equally negative feelings about their academic failures as compared with their normally achieving peers.

The present results extend earlier findings showing sharp differences between Normally and LD or Low Achieving students on indices of academic self-concept (Chapman and Boersma, 1980; Kifer, 1975).

The same pattern of differences was observed in relation to the two subject-specific self-concepts (SDQR and SDQM). The NA group was significantly different from the other two, but there were no significant differences between SC and LA who reported lower self-perceptions of verbal and math ability in line with their lower level of performance. Given that the SC and LA groups were almost at the same achievement level, it was not surprising that they reported the same self-perceptions of ability in these areas. Such findings are in agreement with the notion that frequent failure experiences in specific subjects are usually associated with the development of relatively low perceptions of ability in those subjects (Brookover et al., 1965; 1967; Shavelson et al., 1976).

SC and LA children, then, seem to have developed comparatively low self-perceptions of ability in specific subject areas. Furthermore, these subject-specific negative self-perceptions seem to have influenced their confidence in their academic abilities in general (PCE and PCA). But the evaluations of LA group on PCE, although lower than those of the NA group, did not seem to be as negative as the evaluations that Special Class children held about themselves.

These findings generally point to the direction of considering low academic achievement to greatly influence academic self-perceptions. The fact that differences between groups disappeared when the effects of achievement scores were covaried out is a further indication of the importance of academic achievement in shaping academic self-concept. This is in agreement with the findings of other researchers (Bachman and O'Malley, 1986; Chapman and Lambourne, 1990) who have argued that the most important determinant of self-perceptions of academic ability is actual ability. However, the fact that SC children who seem to be on the same achievement levels with the LA

group, could also be differentiated from them in relation to PCE which is considered as a measure of general academic self-concept, implies that achievement alone cannot account for the differences between groups. It seems that some other factors adversely influence SC children's differential overall evaluations of themselves and their general academic self-concepts. It has been argued (MacIver, 1987) that when grades are infrequent, students have greater freedom to interpret their performance in self-enhancing ways. In the Greek Educational system where no grades or other frequent formal evaluation is given to students, it might be possible for low-ability students to attend only to information that is inherently satisfying. On the other hand, this might be more difficult for SC children whose placement in the special class may be taken as irrefutable evidence of low ability and their daily withdrawal may serve to strengthen this view.

However, one should also keep in mind that grades are not the only or even the most important source of information from which children learn about their academic status. Research suggests that children are sensitive observers of teacher behaviour patterns in the classroom. They seem to be highly aware of how the teacher interacts with other children in the classroom, especially children identified as low and high achievers. They seem sensitive to contextualization cues such as nonverbal behaviour shifts in voice tone, pitch, rhythm of speech, gaze direction and facial expression. According to Weinstein (1989) children referred to praise and criticism more frequently than marks among the teacher practices as sources of information for their relative rank in the classroom. Children also seem to read clues about their ability in the differentiation i) of assignments of tasks; ii) of patterns used to group children for instruction; iii) of motivational strategies used for instruction; iv) of responsibilities given to learners; and v) of the quality of teacher-pupil relationships (Weinstein, 1989, p. 203).

Empirical evidence also suggests (MacIver, 1987) that in the case of infrequent use of grades, children may rely heavily on significant others' assessments and a social comparison process as sources of information. The strength of both these sources of information, however, is directly related to the structure of the task and the organisation

of the classroom. It has been found (Simpson and Rosenholtz, 1986) that differentiated task structures in multidimensional classrooms decrease the child's reliance on social comparison by making global inequalities in performance among children less salient. In contrast, a classroom where every student works on the same task at the same time, as is the case in the typical Greek classroom, facilitates social comparison by making inadequacies more visible. Moreover, recitation which appears to be clearly the dominant form of instruction further serves to emphasize differences between successful and failing students and create an 'explicitness of expectations' (Weinstein, 1991). Therefore, both the organisation of the Greek classroom and the structure of the tasks in conjunction with the special class placement seems to favour a social comparison process which is likely to lead SC children to self deprecation.

In addition, SC children may be more influenced by teachers' and parents' negative criticism than their peers. It has been emphasized (Roberts, 1991) that individuals with low self-esteem or low expectations about their competence are particularly sensitive to critical feedback, such that even isolated instances of failure loom large in competence evaluation. This phenomenon is strikingly evident among learned helpless children (Diener and Dweck, 1978) and depressed individuals (Alloy and Abramson, 1982). Swan and his colleagues (1987) have shown that individuals with low self-esteem view negative social feedback as more diagnostic and self-descriptive than do those with higher self-esteem. As summarized by Parsons (1982) the psychological cost of failure appears to be especially great for those whose sense of self is heavily invested in their academic performance as there is reason to believe that this is the case with the sample of the present study.

The significantly higher evaluations of LA group as compared with the SC group on PCE raises the question of whether LA students evaluate themselves unrealistically high in relation to their academic achievement. An examination of the correlation matrix reveals that the two general academic self-concept scales (PCE and PCA) correlated positively and significantly with achievement measures ($r = 0.19$ to 0.30) in the NA group only, in agreement with the correlations of 0.20 to 0.60 which are reported in the

literature (Brookover and al., 1962; Marsh, 1984). No such correlations were evident in the SC and the LA groups. The stronger correlations between Maths scores and the two academic self-concept scales (PCE and PCA) as compared with Verbal achievement scores in the NA group imply that NA children consider their ability in Mathematics more relevant to their academic self-concept. In contrast, the opposite pattern is observed in LA and SC groups, where stronger correlations appear between Verbal achievement scores and the two self-concept scales.

The same pattern appears in relation to subject-specific self-concepts. More particularly, in NA group correlations between achievement measures and their corresponding subject specific self-concepts were positive and significant for the SDQM-Maths achievement correlation only ($r = 0.26$, $p < .001$). Somehow higher correlations appeared when the RC was considered, although even these were lower than the correlations of 0.50 reported in other studies (Marsh, Relich and Smith, 1983; Marsh and Shavelson, 1985; Skaalvik, 1990). Flouris (1989) reports similar correlations ($r = 0.22$ to 0.23) between verbal and maths achievement and verbal and maths self-concepts. In SC group, correlations were still in the predicted directions, that is, verbal achievement was more highly correlated with verbal self-concept rather than maths self-concept, and maths achievement with maths self-concept rather than verbal self-concept. Nevertheless, these correlations were *very* low, implying that for this particular group, there was no direct correspondence between achievement measures and subject specific self-concepts. In LA group there was only one significant correlation between SDQR and Verbal achievement ($r = 0.32$).

The fewer significant correlations between academic achievement and academic self-concepts found in SC and LA groups may have different explanations. It may imply that these children do not relate achievement in particular subjects with a general sense of competence; it may also show that they do not differentiate as well as their normally achieving peers between different facets of self-concept; or alternatively that they are not realistic in their self-perceptions and they overestimate their abilities. This self-favourability bias seems to appear generally as Wylie (1979) points out, but it might be

more pronounced in failing children as part of a defence mechanism to protect their self-esteem. Empirical evidence (Bachman and O'Malley, 1977; Eshel and Klein, 1981; Connell and Ilardi, 1987) indicates that although children have ample opportunities for receiving feedback concerning their relative academic standing in class, their self-concept of ability may deviate considerably from their academic achievement as determined and conveyed by their teachers. It has been reasoned that this inaccuracy reflects inability of the disadvantaged or the less intelligent to comprehend and utilise cues pertaining to grading criteria employed by teachers. It may also reflect inaccuracies in relation to the nature of feedback from which academic self-concept is derived (Eshel and Klein, 1981). It is maintained that parents and teachers tend to tell children that they can do better, implying that their ability is higher than their performance. Consequently, children tend to think that their ability is average or above average. It could also be that children might resist negative teacher feedback using selective perception, interpretation and memory feedback regarding their academic achievements. Negative information could be distorted, minimized, forgotten or ignored to some degree, while favourable information could be exaggerated (Greenwald, 1980; Wylie, 1979).

It seems that academic self-concept reflects both realistic and illusory self-perceptions of academic attainment. Developing a favourable academic self-concept is probably based on two seemingly opposing trends:

- a) Acceptance of school performance as a basis for determining academic self-concept; and
- b) denial of the validity of teacher ratings when they do not agree with one's self-perceptions.

Harter (1986) argues that the accuracy of self-perceptions appears to be contingent on children's age, their SES origin, and their mean school ability and performance. Those performing poorly at school are less accurate than their higher achieving peers at evaluating their school achievements. Similarly, older children and high SES children tend to have more realistic self-concepts, while younger and low SES pupils are more inclined towards overestimating their actual attainment. As LA and SC children in this

study differ from the NA group on both achievement measures and SES, the accuracy of their self-perceptions may have been influenced accordingly.

Research also shows that inaccurate perceptions of competence may be influenced by the accuracy with which parents 'translate' ability feedback to their children. There is some evidence that parents serve as interpreters of objective competence feedback for their children and they may provide feedback that can sustain inaccurate perception of academic competence (Eccles, 1983; Phillips, 1987). It is characteristic that Tzani (1983) found that 63% of the Greek parents in her sample believed in their children's ability and they expressed the view that their child's underachievement was due to lack of effort rather than lack of ability. However, one might also speculate that LA and SC children were probably receiving contradictory feedback from their teachers and parents. Although they rated themselves more favourably than their actual achievement would allow, they still held significantly lower self-perceptions as compared with NA group.

An additional factor which might influence the accuracy of self-perceptions is the stage at which children attain a 'normative' level in the use of the concept of ability. Nicholls (1990) maintains that the use of the concept of ability as capacity emerges at about 10 to 13 years. Such an attainment, he argues, would mean an increase in the use of social rank to judge one's competence. The considerable drop of PCE scores at grade 5 in LA and SC groups may show that children start construing ability as capacity at this level. Accuracy of self-perception, however, does not necessarily appear to be a virtue as a stable conception of ability seem to evoke heightened sensitivity to failure and the increase in the systematic use of social rank to judge one's competence. Both could lead to lower ratings of one's ability and result in a decline of enthusiasm for learning.

This has led some theorists (Greenwald, 1980; Harter, 1986) to suggest that overestimation of academic ability may serve an important adaptive function operating as a kind of self-protective mechanism, given that a belief in one's incompetence is associated with further underachievement (Weisz, 1983), depression (Nolen-Hoeksema et al., 1986), lowered future expectations (Phillips, 1984), and unrealistically low

achievement striving (Harter, 1983a). It is reasoned that illusory self-perceptions appear to help people to come to terms with traumatic experiences over which they have no control. A positive and unrealistic academic self-concept may help failing students to overcome the frustrations caused by their failures. The advantage of an unrealistic self-concept, however, was questioned by other researchers as appearing to be associated with failure to cope with school demands. It has been suggested that if children do not acknowledge their academic failures, they may be less willing to adopt alternative learning strategies when faced with difficult tasks. Connell and Ilardi (1987) found that the positive association between self-concept and overrating was inverted after level of perceived competence was controlled for. Overraters revealed more anxiety than underraters in face of failure, and they were rated by their teachers as having less efficient coping strategies. It is possible that overraters do not really pose the high levels of positive self-concept which they report, but they present this inflated image as a defensive reaction against threats to self such as failure or rejection (Paulhus, 1986).

An additional factor which may adversely influence the academic self-concepts of SC children is related to the attitudes and lowered expectations of significant others. Several studies point out that teachers and parents alike tend to hold lower achievement expectations for students who have difficulties at school (Boersma and Chapman, 1978; Coopersmith, 1967; Hamachek, 1987). There is some indication that such expectation effects may translate into behavioural influences. Teachers have been found to interact less frequently and more negatively with low expectation students, pay less attention to their correct responses, and offer less positive reinforcement for these responses. Thus if the lower expectations held by significant adults are transformed to differential classroom experiences for these children, these are likely to contribute to the maintenance of low achievement levels and negative self-perceptions.

In sum, SC children judged themselves more negatively than their Normally Achieving peers on academic self-concepts and global self-esteem. They also differed from Low achieving children on evaluations of general cognitive competence (PCE), although they did not differ from them in terms of actual competence. LA children, on the other

hand, did differ from NA group on academic self-concepts but not on global self-esteem. This implies that LA children were able to derive satisfaction from other areas to counterbalance the negative effects of academic failure. For SC children who seem to associate their worth as a person with their image as learners more than children in the other two groups did, academic failures seemed to be much more devastating.

The accuracy of children's self-perceptions in the cognitive domain was explored through the correlations between their self-perceptions and teachers' evaluations in Verbal and Maths achievement areas. The low to moderate correlations ($r_s = 0.06$ to 0.32) found between achievement measures and self-concept scales for all groups indicate that students probably have somewhat higher opinions of their abilities than could be supported by objective criteria. As already discussed these correlations were lower in LA and SC groups, implying that the self-concepts of these children although more negative than the NA group, were still unrealistically high. However, even if the self-concepts of children in these groups were unrealistic, this does not mean that their responses were biased. To the contrary, so long as their responses accurately reflected their self-perceptions whether or not these self-perceptions were realistic when judged by external standards, the interpretations made on the basis of the self-concept responses were still valid.

5.3.1.1 Age Differences:

Age differences were observed only in relation to the PCE scale. In all three groups children's scores were lowest at Grade 3 level. There is considerable evidence that children show a dramatic drop in positive self-evaluation during the early years of school (Benenson and Dweck, 1986; Eccles et al., 1984; Stipek, 1981). As it has been discussed in section 2.10.4.1.3 younger children view their abilities more positively (Nicholls, 1978). The decline which is evidenced in older children (9 - 10 year olds) is explained as a result of either their emerging self-critical abilities (Markus and Nurius, 1984) or as a result of changes in the educational environment, socialization agents,

social comparisons and social roles. The comparably low self-concept of third graders found in this study, then, is in agreement with the theorizing in this area, and can be explained as a result of developmental changes in cognition and the internalization of academic standards which result in less uniformly positive self-perceptions.

In all three groups there was another drop in PCE scores in Grade 5. This might represent a developmental shift in competence evaluation from absolute to relative terms. Several researchers (Clifford, 1978; Harter, 1983; Ruble, 1983; Stipek and Hoffman, 1980) have pointed out developmental changes with respect to self-perceptions of ability and the incorporation of comparative information in performance evaluation. It has been suggested that younger (6 - 7 years) children's predictions about performance and ratings of ability show relatively little effect of prior performance feedback, especially failure (Clifford, 1978; Parsons and Ruble, 1977; Stipek and Hoffman, 1980). In addition, although there is heavy emphasis upon comparative evaluation from the moment children enter school, they do not seem to utilize comparative standards until about 7 - 9 years of age (Harter, 1983; Ruble, 1983). It has been argued that this shift in the use of social comparison information may have a profound impact on children's self-concept, independent of their performance level (Levine et al., 1982). Moreover, once children have defined their capacities and characteristics, subsequent information received is likely to have less impact because such information is interpreted in terms of concepts already formed (Ruble, 1983). However this drop in self-concept scores at both Grades 3 and 5 may also be the result of more academic demands made on children at these stages. It should be noted that in Greece in both Grades 3 and 5 children have to deal with new subjects in their school program. In Grade 3 History, and Religious Education become part of the curriculum. Both textbooks are quite difficult and contain a vocabulary probably far beyond the reach of most children. Similarly, in Grade 5, Physics and Chemistry are included in the program, while evaluation becomes more formal. In short, both grade levels (3 and 5) could probably be considered transitional stages for primary school children in terms of the academic demands made on them.

In the SC group a decline in PCE scores was evident starting in Grade 4. A similar decrease in LD students' perceptions of cognitive competence is reported by Renick and Harter (1989). Also Black (1974) and Kifer (1975) found decreases in low achievers' self-concept scores. Presumably this gradual decrease in self-concept scores was due to the fact that older children have longer histories of academic failure. However, this decline was observed for SC only, while in LA group, children obtained their highest scores in Grade 6, reaching almost the same level as the NA group. A possible explanation is that as at the primary school level grades are not used, and evaluation, as referred to elsewhere, is mostly informal, the differences between Normal and Low achievers may be less salient. But for SC children the situation is different. The placement of these children in special classes is a formal and indisputable way to confirm their academic failure and would prevent them from paying attention only to self-enhancing information as the LA group might be able to do. Therefore, comparisons of SC children with their Regular Class peers would undoubtedly result in relatively negative self-perceptions of ability and feelings of inferiority. An alternative explanation would be that LA children did not in fact have^{v6} lengthy failure histories and their academic troubles were of recent origin.

5.3.1.2 Sex Differences:

Contrary to previous evidence that girls consistently underestimate their abilities, while boys overestimate them, no sex differences were found in this study in relation to global self-esteem or general academic self-concepts. There is an aspect of the present study which may be instrumental in producing this notable lack of sex differences. The developmental literature suggests that sex linked competence judgements may not emerge as a stable phenomenon until adolescence (Maccoby and Jacklin, 1974). As the sample of this study was constituted of primary school children, such differences may not have as yet emerged.

The only significant sex difference obtained was in relation to Maths self-concept (SDQM). Consonant with other research studies elsewhere (Fennema and Peterson, 1985;; Marsh, Barnes, Cairns and Tidman, 1984; Marsh, Bryne and Shavelson, 1988; Skaalvik, 1990) and studies in Greece (Flouris, 1989) and consistent with sex stereotypes, girls obtained lower scores than boys in all three groups. The mean achievement scores of boys and girls in verbal and maths areas show that in all groups boys scored slightly higher than girls in maths, and slightly lower than girls in verbal achievement in the NA group only. However, these differences in achievement scores were not statistically significant. Therefore, despite the fact that girls did as well as boys in maths, they judged themselves more negatively. Several researchers propose that such sex differences in self-concept scores cannot be explained by differences in achievement but rather by differential sex role socialization patterns. The attitudes of parents and teachers often reflect cultural stereotypes regarding not only the supposedly natural superiority of boys' mathematical abilities but also the different utility of mathematical skills for boys and girls (Nash, 1979). By embracing these attitudes, teachers and parents could undermine not only the girls' confidence, and their self-concept but also their motivation to perform well and their actual learning in mathematics.

5.3.2 Locus of Control Scales:

The results for academic locus of control and causal attributions provided further evidence of the differences between groups and the negative self-perceptions that SC children seem to hold about themselves. This was evident from both within and between group comparisons.

5.3.2.1 Between Group Comparisons:

The major predictions of this study concerning the attributions of success and failure of children in the three groups were clearly supported by the data. Consistent with the idea that failing children would take less personal responsibility for academic outcomes than their peers, SC children obtained significantly lower scores than both LA and NA groups, on the IAR scale. This clearly indicates a greater tendency of SC as compared with the other two groups to ascribe responsibility for academic outcomes to external factors. Special Class children took less responsibility for both their academic successes (I+) and their failures (I-). The LA group also differed significantly from the NA group showing a greater degree of externality as compared with the latter. These findings are in agreement with other research studies which report external control orientations among failure-prone and underachieving children in accounting for school success and failure (Chapman, 1988; Chapman and Boersma, 1979; Kifer, 1975; Pearl, Bryan and Donahue, 1980; Phares, 1976).

On the I+ subscale, SC and LA children showed a tendency to ascribe responsibility for successful outcomes to external sources more than the NA group. This relatively external orientation was found for boys and girls, and was clearly evident by Grade 3. Concomitantly children in these groups saw internal factors as being less influential in causing successful academic outcomes. It seems logical to expect that underachieving children would come to believe that they were not adequate in bringing about successful academic outcomes and attribute the relatively infrequent success to external sources. However, the SC group differed significantly from the LA group as well, a fact which lends further support to the notion that academic achievement alone is not responsible for the negative self-perceptions of SC children.

Hypotheses 6a and 6b, assuming that SC and LA groups will obtain higher scores in relation to acceptance of responsibility for failure (I-), thus attributing their failures to themselves, *were* not confirmed. On I- scale, SC children again showed greater externality than the other two groups, thus ascribing failures to external factors again rather than themselves. No differences existed between LA and NA groups.

Significant differences between groups were found in relation to specific attributions (ability and effort) for success and failure situations. More specifically, the SC group differed significantly from both LA and NA in relation to ability attributions for success (I+A). There were no differences between LA and NA groups. Thus, SC children attributed their academic successes to their ability significantly less than children in LA and NA groups, thus showing less self-confidence and positive self-evaluation.

Perceptions of ability attributions for failure outcomes (I-A) did not differentiate between groups. ^{Some} Children in all groups were unwilling to attribute their failures to lack of ability, although SC children made these attributions more often than the children in the other two groups.

In relation to effort attributions for success (I+E) SC children again differed significantly from both LA and NA groups in attributing their successes to external factors rather than to effort. The significant differences between LA and NA groups imply that children in LA group as well, were more external in their success/effort attributions than their NA peers.

Equally significant differences were observed between SC and NA groups as regards effort attributions for failure (I-E). No differences existed between LA and NA groups. Therefore while children in LA and NA groups considered lack of effort as important in determining failure, SC children attributed it externally and therefore beyond their control.

It has been proposed that the 'healthy' attributional pattern consists of attributing successes to internal factors and failures to external. Normally achieving children in this study confirm to this pattern only partially, as they made more internal attributions in both success and failure situations as compared to LA and SC children, while the opposite was true for the last two groups. Internal attributions imply a belief that one's outcomes depend primarily on oneself and might reflect a pervasive social-educational norm, as there are indications that both parents' (Bar-Tal and Guttman, 1981) and teachers' (Skinner et al. 1988) verbal messages about the causes of learning emphasize internal causes, especially effort. On the other hand, the external attributions made by

the LA and SC groups may be interpreted as a kind of self-protective mechanism. Covington and Omelich, (1981) point out that one of the keys to personal resiliency in the face of continuing failure is the attempt to externalize responsibility. The alternative would be blaming oneself as incompetent which would intensify cognitive and affective reactions and be particularly devastating for those children with low self-concept.

The finding that SC children seem externally oriented for both success and failure is in agreement with other researchers who report that LD children are more likely to perceive success and failure as associated with external factors (Fincham and Barling, 1978; Rogers and Saklofske, 1985; Pearl et al., 1980). This indicates that these children take little personal responsibility for their learning, perceiving themselves as ineffective or 'helpless' learners (Dweck and Reppucci, 1973). The picture of SC children in this study fits the definition of 'helplessness' as given by Dweck (Dweck and Reppucci, 1973) who argued that helpless children tend to explain academic successes and failures in terms of external causes. Others (Kirk and Chalfant, 1984) define learned helplessness as characterized by the belief that failures are caused by personal deficiencies and successes are due to external factors beyond one's control. Although both attributing one's failures to a stable, global factor (insufficient ability) and attributing it to external factors (as SC children in the present study did) are related to persistence problems (Dweck, 1975; Diener and Dweck, 1978), the implications of these two attributions may, at times, be very different. For example, by attributing their difficulties to the teacher, children may be able to maintain some confidence in their abilities, be more optimistic about future performance and consequently persist on the task.

SC and LA children's external beliefs may be partly the result of noncontingent behaviour of significant others in their environment, especially teachers. Skinner et al. (1990) suggest that the experience of highly contingent teacher behaviour is associated with positive control beliefs regarding academic outcomes. In contrast, teacher noncontingency is related to beliefs organized around powerful others, luck and other external factors.

The fewer ascriptions of effort made by SC children as compared with the other two groups, in both success and failure, may represent a realistic withholding of effort arising from beliefs that success is unlikely. As Covington and Omelich (1979) state, expending effort when the risk of failure is high poses a threat to self-perceptions of ability.

Dweck and Legget (1988) offer a more detailed explanation of when the expenditure of effort poses a threat to self-esteem. They argue that one's effort expenditure will be interpreted in line with differing goal concerns. The researchers maintain that the goal an individual is pursuing creates a framework for interpreting and responding to events that occur. Thus the same event may have an entirely different meaning and impact if it occurs within the context of a learning versus a performance goal, and that a focus on performance goals (competence judgements) creates a vulnerability to the helpless pattern, while the pursuit of learning goals (competence enhancement) promotes a mastery oriented pattern. More specifically, within a performance goal, individuals are concerned with measuring their ability. Within such a framework, outcomes will be a main source of information relevant to this concern and therefore failure may easily elicit the helpless attribution that ability is inadequate.

In contrast, learning goals create a concern with increasing one's ability and extending one's mastery. Within this framework, then, outcomes would provide information of whether one is pursuing an optimal course, and failure would simply mean that the current strategy is insufficient to the task and may require revision.

Dweck and Leggett (1988) argue that individuals pursue differing goals as a result of differing theories that they hold about themselves. Specifically, conceiving one's intelligence as a fixed entity is thought to be associated with adopting a performance goal of documenting that entity, whereas conceiving of intelligence as a changeable quality is thought of being associated with the learning goal of developing that entity.

Children with differing goals appear to use very different inference rules to process effort information. Those with performance goals use effort as an index of high or low ability, while those with learning goals are more likely to view effort as a means for

activating or manifesting their ability for mastery. Research by Leggett and Dweck (1986) provided empirical evidence that children with performance goals viewed effort and ability as inversely related. High effort implied low ability, and low effort implied high ability. In contrast, for children with learning goals effort and ability were positively related; greater effort activated and made manifest more ability.

Nicholls et al. (1989) present a similar argument by differentiating between task orientation (Leggett and Dweck's learning goals) and ego orientation (performance goals). The researchers maintain that when individuals are task involved, their goal is to increase their understanding and to accomplish something not previously done. Competence is judged in a self-referenced fashion. In ego-involvement, on the other hand, the goal is to establish the superiority of one's ability over the others or avoid the implication that one's ability is lower than others.

In sum, while effort in the service of learning seems to bring intrinsic rewards, pleasure or pride, within performance goals or an ego-orientation, effort may endanger anxiety. Within a performance goal, experiencing failure or effort exertion warns of low-ability judgement and thus poses a threat to self-esteem, and then, if the negative judgement appears increasingly likely, depressed affect and a sense of shame may set in (Sohn, 1977). Alternatively, individuals could adopt a more defensive pattern, devaluing the task or expressing disdain towards it (Diener and Dweck, 1978, 1980).

Dweck and Leggett (1988) argue that the same theory which is used to conceptualize intelligence as a fixed or changeable entity, can be used to conceptualize the self as a collection of fixed traits (entity theory), or as a system of malleable qualities that is evolving over time through the individual's efforts (incremental theory). These theories can be seen as two different forms of self-concept with two different sources of self-esteem. That is, for the entity theorist, self-esteem will be based on performance goals, while for the incremental theorist, self-esteem will be based on learning goals. In the case of the first, outcomes indicating the adequacy of one's attributes will raise self-esteem, in the case of the second, mastery of challenging and valued tasks will raise and maintain self-esteem.

It is important to note that the word intelligence may be applied to different forms of competence in different cultures. This variation would reflect different types of abilities that are valued in the particular culture. Generally the term is employed by children eight years and older to denote competence at academic and mental activities (Nicholls, 1990). One might also speculate that the differing meaning of intelligence may influence the prestige accorded to different subjects that appear to demand abstract reasoning. This greater valuing of abstract reasoning might make subjects such as mathematics especially threatening for those who doubt their intelligence.

It is noteworthy that the characteristics that Georgiou-Nilsen (1980) lists as presented in the Greek primary school textbooks referring to the qualities that a 'proper' child should possess include the characteristic 'to be intelligent'. Tzani (1983) found that the Greek parents in her study used the term 'intelligence' to refer to a fixed, inherent quality. She states that 60% of the parents thought that intelligence is a fixed ability and it was the most important cause of school success. These findings point out that the sample of this study is likely to hold an entity theory of intelligence. This would involve an explicit concern about the adequacy of their ability and would in turn expose them to the adverse effects an entity theory may have. The burden on children's shoulders, however, becomes greater by the fact that such a characteristic is considered a 'must', not only for school success but success in general.

In addition, classroom practices serve to strengthen these views by providing information about performance that focuses attention on the self, through the use of grades, praise and normative comparisons. Such information emphasizes activity as a means to the end of demonstrating high capacity rather than as satisfying in itself, and serves to reduce inherent interest especially, if the individual expects outcomes to indicate low rather than high ability (Nicholls, 1984). All this is likely to be more pronounced for chronically failing students as the result of the consistent failure and the consistency of certain situational factors in the academic environment. The finding that SC children made fewer effort attributions than the NA group could be explained in the light of argument presented above. In addition, the fact that SC children made also

fewer attributions to effort as compared to LA children in success situations but not in failure, where there were no significant differences between groups, may further indicate that either by in reality avoiding the exertion of effort, or by not admitting it and ascribing failures to external factors, these children tried to protect their self-esteem. In either case SC children seemed to have tried to avoid the implication of inferior ability.

One more aspect of Dweck and Leggett's conceptualization which is of importance for the results of the present study is their argument of the existence of a relation between the two different theories (entity and incremental) and locus of control. It is argued that within an entity theory, the basic attributes that influence outcomes are perceived to be uncontrollable and therefore perceptions of control over outcomes are conditional upon the attribute level. The individual will perceive control only if the relevant attribute level is thought to be high. For example, desirable outcomes will be viewed as possible only if, for example one judges himself to be intelligent. If not then control attempts will be perceived as futile. Thus, perceptions of control will be more difficult to generate and maintain when individuals operate within an entity framework. In contrast, an incremental theory is thought to more reliably generate and maintain perceived control over events and outcomes. The belief that an attribute can be potentially altered and desirable outcomes can ultimately be achieved even if its present level is low, is related to a basic belief of controllability of the factors that determine outcomes.

A particularly important point in Dweck and Legget's argument about the adoption of an entity or incremental theory, is the notion that any factor and not just intelligence can be viewed as controllable or uncontrollable. Other theorists (Little, 1985; Chapman and Lawes, 1987) have also expressed their doubts as to whether factors which are considered inherently controllable or uncontrollable by classic attribution theory, are held as such by children. Although the answer to this question is only speculative at present, it seems of utmost importance when judging causes as controllable or uncontrollable to consider the perceivers point of view.

5.3.2.2 Within group Comparisons:

When the scores of the two subscales (I+, I-) were compared within each group, the well established asymmetry in attributional patterns was evident, that is, children in all three groups made fewer internal ascriptions in failure situations than in successes.

When attributions across groups were compared, some differences between them did emerge in the relative rank ordering of the four attributions and the absolute importance assigned to single causes. The ranking for the NA group in terms of descending importance of causes was: I+E, I+A, I-E, I-A. In the LA group although I+A came first, the differences between I+A and I+E were minimal. For the SC group this order was as follows: I+E, I+A, I-A, I-E. Generally, success/effort attributions were the highest rated cause, as shown in other studies as well (Ames, 1984; Chambers and Abrami, 1991). Children perceived effort rather than ability, as the single most important cause of their individual achievement. This, as already discussed, might echo teachers' ideas and a cultural emphasis on the importance of effort for successful academic outcomes. This finding is in contrast with the proposal of Covington and Omelich (1979a, 1979b) that self-worth is determined by one's ability, and that ability is more closely linked with positive self-esteem than effort. However, such a finding might be expected considering the age group from which the present sample was drawn, as it has been documented by research that young children tend to overestimate the efficacy of effort and they only gradually come to adopt a compensatory schematic relationship among ability, effort and outcome (see section 2.10.4.3). In addition, Brown and Weiner (1984) have argued that the preference to be a student of high ability rather than high effort is not due to the assumed union between high ability and positive self-esteem but rather due to the long-term instrumental value of ability. In either case, older children who presumably have acquired this notion would show greater preference for ability attributions.

In relation to failure attributions, the SC group made more attributions to lack of ability rather than lack of effort. When the scores of the two sexes were examined separately, however, it was found that this was true for girls, but the opposite pattern was

observed for boys. That is, SC girls made more attributions to lack of ability as compared to SC boys who made more attributions to lack of effort instead. This might be the result of the different classroom experiences and different patterns of socialization of boys and girls as will be discussed in more detail in the section on sex differences.

The LA group attributed success equally to ability and effort, and the same pattern was observed for failure situations. No significant differences existed between LA boys and girls.

The NA group attributed failure significantly more to lack of effort rather than to lack of ability (Mean I-E = 4.15; Mean I-A = 3.13). These differences between groups in terms of failure/effort attributions have important educational implications in terms of the children's future expectations and persistence on the task. The children who attribute their failures to lack of effort (NA group) would probably be motivated to exert more effort in the future believing that this would bring them success. Children in the other two groups who did not seem to see their failures as the result of insufficient effort but attribute them to external factors would not be inclined to try more believing that effort will not make a difference.

The within group comparisons revealing that the patterns of causal ascriptions for ability and effort differed within each group further illustrated the between group differences and their importance for future expectations.

5.3.2.3 Age Differences:

Evidence from correlational analysis indicated that the grade level was significantly correlated to total IAR scores and the subscales (except I-A) in NA and LA groups. This implies an increasing sense of personal responsibility for the outcomes as children get older. The significant correlations between effort and ability subscales with grade level point out to the direction of developmental changes in children's understanding of the concepts of ability and effort as maintained in the literature (Nicholls, 1978). This

progression to an internal orientation was not evidenced in SC children. This suggests a somewhat more immature locus of control orientation for this group as compared with their peers. However, in all three groups I-A subscale appeared uncorrelated to grade level showing that children generally were unwilling to attribute responsibility for failure to lack of ability.

The results from the analyses of covariance also showed the significant grade effect found in correlational analyses with a clear tendency for older children to obtain higher scores than younger ones. These results are in accordance with the generally accepted finding in the literature that perceived internality increases during middle childhood ((Frieze, 1980; Lefcourt, 1976; Weisz and Stipek, 1982). Theorists have assumed that these increases are the result of linear increases in perceived internality combined with linear increases in perceived externality. However, because typical locus of control instruments combine perceived internality and externality, this presumed pattern of developmental differences has never been examined directly. Moreover, as discussed at length in section 2.10.4.3 the assumption that internal locus of control increases during middle childhood conflicts with an accepted finding in the area of perceived internality as studied from a Piagetian perspective (Piaget, 1930). From this perspective it is argued that young children overestimate the effectiveness of their efforts and actions, and with increasing age they show more conservative estimates, resulting in decreases in perceived internality across middle childhood.

Recent research (Skinner et al., 1988) by differentiating between three different sets of beliefs in perceived control - control beliefs, means-ends and agency beliefs -allows for the examination of developmental influences in several internal and external causes simultaneously. As Skinner and Chapman (1987) found in a study with primary school children in grades 1 to 6, beliefs about the effectiveness of causes in general decrease during middle childhood, but the differences between the causes in terms of their effectiveness increased during these years. The researchers maintain that a primary development during middle childhood is the differentiation of causes from each other in terms of their perceived effectiveness. This line of research seems promising in

clarifying the controversy surrounding the assumed increases in perceived internality but at present the results are only tentative.

A significant group by grade interaction was evident on I+ scores. The results show a gradual but nonsignificant increase in internality scores for the SC group. As already pointed out this group seemed to hold the same control orientation across grades. A sharp increase from grade 3 to 4 in LA group was evident, with the highest mean scores obtained by older children in grade 6; and a gradual increase in internality for the NA group between grades 3 and 5, but a drop in scores from grades 5 to 6. LA children in grade 6 reported more internal perception of control in success situations than children in the NA. The reason for these results is not entirely clear.

What seemed clear though was that SC children had the most external perceptions of control as expected and age seemed to make little difference to their externality.

5.3.2.4 Sex Differences:

In correlational analysis sex appeared uncorrelated to any of the IAR scales except I-A. Similarly, the results of the analyses of covariance also showed a significant sex difference in relation to I-A subscale only. Results for IAR total scores showed girls to have relatively more external orientation for achievement outcomes than boys but the differences between sexes were minimal. The opposite pattern was found in SC, where girls seemed more internally oriented than boys, but again this difference was not significant. These results suggest that even though a primary school sex difference in locus of control may exist, sex is not a potent explanatory factor at this stage.

In relation to the two subscales measuring acceptance of responsibility for success (I+) and failure (I-) again differences between sexes were not significant. However, girls and boys seemed to adopt different attributional patterns to explain their successes and failures. In relation to success subscale (I+) results indicated that in all three groups females tended to score higher than males, although this trend fell short of significance. On the failure subscale (I-), males had higher mean scores than females, in NA and LA

groups, a finding showing that males accepted more responsibility for their failures than females. These results showing females more apt to take responsibility for their successes and less apt to take responsibility for their failures, are not consistent with what has been suggested in the literature where the general finding is that females tend to feel more responsible for their failures than males (Bar-Tal and Frieze, 1977; Dweck and Repucci, 1973; Nicholls, 1975).

Many studies suggest that men are more likely than women to show self-enhancing illusion of control (Martin, Abramson and Alloy, 1984). Maccoby and Jacklin (1974) have referred to this self-proportional tendency in men as the "male selective filter" because it is characterized by an acknowledgement of successes but a denial of failures. However, there are several other studies reporting no differences between sexes (Beck, 1977; Diener and Dweck, 1978) or that females are more inclined to take responsibility for success than for failure (Boss and Taylor, 1989). Probably these patterns develop as a result of the differential learning experiences that boys and girls have with evaluative feedback in the classroom. Studies show that boys receive far more evaluative attention in the classroom and more negative feedback (Beck and Lewis, 1977). Studies also show that men and women are influenced differentially by the informational value of others' evaluations. Women seem to incorporate to a greater degree both positive and negative evaluations into their own assessments and they see a greater amount of valuable ability information contained in these evaluations (Roberts, 1991). It is reasoned that as the criticism that boys receive is usually directed towards nonintellectual qualities such as misconduct, it would be easier for boys to discard the negative criticism received by significant others. It is important to note that these sex differences in attributional patterns were found to be present at the age of four years, with the direction being the same as those found in adults (Löchel, 1983). The dissimilar results found in this study may be attributed to the particular cultural demands and socialization practices of the Greek society.

In SC group there were no differences between boys and girls on I+, as all children attributed their successes mainly to external factors, but on I- girls had higher scores, thus they seemed to accept more responsibility for failures than boys.

Interesting sex differences were observed in relation to the two ability subscales. There was a significant group x sex x grade interaction in relation to success/ability subscale (I+A). In success/ability attributions (I+A) girls obtained higher scores than boys at grade 3 level in all groups. For NA and LA groups this pattern was evident until grade 6 but sex differences were non-significant at this stage. Girls' scores in SC after a dramatic drop in the middle grades, were again significantly higher at grade 6 level. Generally it seems, that contrary to what is reported in the literature, that women appear to be more external than men in their success/ability attributions, in this study, girls made more ability attributions in success situations than boys. The relative drop in mean scores which appears in grades 3 and 4 for SC children may be explained as a result of developmental changes in relation to the concept of ability as a stable trait. This is more pronounced in SC children who probably have more reasons to be overconcerned with their ability or lack of it, and less evident in LA group.

One would expect sex differences to be weaker among younger children than among older ones because young children had less experience in achievement contexts. However, for SC group these differences were greatest in grade 3 level. It might be that children at this grade level had enough academic experiences to explain the significant difference in their mean scores.

The only statistically significant sex difference was observed in relation to I-A, in NA and LA groups. A comparison of the mean scores of boys and girls in these groups showed that boys seemed to attribute responsibility for failure to lack of ability more than did girls. Again this finding is discrepant of what is reported in the literature.

In SC group girls appeared to attribute both their successes and failures to ability or lack of it, more than boys did when no age groups were involved. It can be seen that even girls in SC group, whom one might think as more vulnerable to a helpless attributional style, did not completely confirm to the 'female' attribution bias, that is

attributing failure to low ability and not attributing success to high ability (Eccles, 1983). This helpless style, however, was evidenced by grade 4 and 5 girls in SC.

In sum, girls in this study, at least those in NA and LA groups, appeared more willing to accept responsibility for their successes and less for their failures while the opposite pattern was observed in boys. This is an interesting sex difference, as it is the opposite of what would be accepted on the basis of the traditional sex role socialization patterns and the findings of the great majority of studies exploring attributional differences between sexes. Several methodological considerations may explain this discrepancy. First, the IAR is a dispositional measure which asks a number of questions about hypothetical situations that the student can encounter. In many studies exploring attributional patterns, a situational measure involving an actual achievement situation has been used. As noted by Marsh and his colleagues (Marsh, Cairns, Relich, Barnes and Debus, 1984), there may well be a difference between situational measures and dispositional measures of attributional tendencies. Second, the forced-choice format of the IAR may create problems because there is recent evidence that internal and external attributions may be independent of each other rather than inversely related.

Another tentative explanation hinges on the sex roles within Greek society and the socialization patterns of boys and girls. In the Greek culture there seems to be a very strong cultural pressure on boys, but not so great on girls, for academic excellence. Boys are encouraged to pursue university degrees and career more than girls. This coupled with the fact that boys receive more negative feedback from significant others but mainly for non-intellectual aspects of their work (see section 2.10.4.4) may serve to make them more self-reliant and self-confident and more ready to accept responsibility for their failures. In addition, boys seem to experience a great deal more negative feedback in their interactions among themselves. Studies do show that feedback begins to lose its value as information about intellectual ability when it is used indiscriminately to refer to ability-irrelevant behaviour. This, then, might make boys see less informational value in the evaluations of others and therefore, be less inclined to be influenced by negative feedback.

On the other hand, girls excel as students in the primary school, and they get more praise and less negative criticism. However the more sparing use of negative feedback for girls, and its specific relevance to intellectual inadequacies, makes it harder for them to discount its ability relevance (Dweck, Davidson, Nelson and Enna, 1978; Roberts, 1991). The fewer demands made on girls from both parents and teachers about future work prospects and successful careers might seem at first to ease the anxiety over possible academic failure. Some statistical figures seem to strengthen the point that less is expected from girls in terms of a career prospect. Until 1971, two out of three illiterate persons in Greece were women, while one out of five women did not finish primary school (Eliou, 1988). Eliou (1988) reports that while girls represent the 48% of the student population in the primary and secondary schools, only 14,7% of them attend schools of vocational and technical training, and they remain a small minority in the university sectors which offer the best professional perspectives. Within Greek society, marriage and motherhood is still considered the 'natural' choice for women. Fragoudaki (1978) in her study examining Primary School books emphasizes the following role of women as presented in the books:

"The woman's role is one, given from the beginning and natural, to be a mother and housewife. The model is to such a degree absolute and inflexible, that the working woman is presented as something unnatural, and she is described as the result of a great financial misfortune" (p. 18).

However, Greece is in a transitory phase, and while the traditional sex roles still exist, especially in big urban areas, as is Athens, new attitudes about sex roles have been developed. Dragonas (1983) stresses the fact that while girls in her study perceived themselves mainly as achievers, they also seemed caught between two role requirements, as they wanted to combine their role in the family with action outside home. This state of affairs would create contradictory demands and expectations for girls and may result in anxiety. In addition, Tzani (1983) emphasizes the peculiar situation of the girl in the Greek family, where girls feel obliged to 'gain' the love and admiration of significant others whose behaviour is usually more favourable towards the boys of the family. Moreover, girls appear more anxious than boys in academic

settings (Maccoby and Jacklin, 1974) and more sensitive to adult approval (Dweck and Bush, 1976) and show a greater reliance on feedback from significant others as informative about their abilities. Their relative lack of acceptance of responsibility for failures as compared to boys, may be a defensive reaction serving to lessen their anxiety.

It is argued, therefore, that the attributional pattern found in this study for girls, is a defensive one; it is fear of social disapproval, rejection and anxiety resulting from diffuse role patterns and a greater reliance on others' evaluations which make girls to attribute responsibility for their failures externally and accept responsibility for their successes. On the other hand, boys already preparing for a more demanding career, feel more ready to accept challenges and negative criticism, their self-evaluation depends less on others' evaluation (Roberts, 1991) and therefore, are less afraid to accept responsibility for their failures. This explanation, however, is only a tentative one and certainly additional research will be needed with a more representative national sample to further explore and verify these findings.

5.4 Relations Among Variables:

Another set of analyses focused on the relationship between achievement, self-concepts and locus of control/causal attributions. The discussion on the relations of these variables will be based on the findings from correlational analyses first, followed by a discussion of the results of path analysis.

5.4.1 Self-Concept Scales:

The two subject-specific self-concept scales, SDQR and SDQM were moderately correlated for the NA ($r = 0.18$) and the LA ($r = 0.16$) groups, and highly correlated for the SC group ($r = 0.66$). In contrast, the two achievement measures, verbal and maths achievement were more highly correlated for the NA group ($r = 0.68$), significantly but

less highly correlated for the SC group ($r = 0.36$), and uncorrelated for the LA group ($r = 0.00$).

The findings from the NA group are in agreement with previous findings by Marsh (1986c) who found low correlations between verbal and maths self-concepts but significantly high correlations between verbal and maths achievement scores. He proposed the Internal/External (I/E) model to account for these correlations. He argued that maths and verbal self-concepts are formed in relation to both internal and external comparisons. For the external process, children compare their self-perceptions of their own maths and verbal skills with the perceived skills of others and this forms the basis of their maths and verbal self-concepts. Subsequently an internal comparison process takes place in which children compare their maths and verbal achievement with each other, and it is the difference between the two that contributes to a high self-concept in one area or the other (Marsh, 1986c). Skaalvik and Rankin (1990) did not find any support for the I/E model in their study with 231 Norwegian 6th grade students. On the contrary, they found that verbal and maths self-concepts were highly correlated ($r = 0.67$). The evidence therefore is inconclusive. The substantial correlation between verbal and maths self-concept scales found in this study for the SC group, may indicate that as most of these children were failing in both subjects their evaluation of their abilities in these areas was similar, or that they did not differentiate between the two subject-specific self-concepts.

Correlations between self-concept scales and achievement measures were generally in the expected directions. Consistent with expectations from other studies (Chapman and Boersma, 1980; Marsh and Parker, 1984) achievement measures were substantially correlated with academic self-concept scales and less correlated with global self-esteem in LA and NA groups. However, Hypothesis 11 was not confirmed as achievement measures did not always correlate more highly with self-concepts in the matching content areas. In NA group for example, there were stronger correlations between achievement measures and PCE, rather than between achievement measures and subject-specific self-concepts.

More specifically, correlations between achievement measures and their corresponding subject-specific self-concepts were positive but not always significant. In the NA group there was a significant correlation between achievement in Maths and SDQM ($r = 0.26$, $p < .001$); in the LA group there was a significant correlation between verbal achievement and SDQR ($r = 0.32$, $p < .05$). In the SC correlations were still in the predicted directions, that is, verbal achievement was more highly correlated with verbal self-concept rather than maths self-concept, and maths achievement with maths self-concept rather than verbal self-concept, thus demonstrating the consistency of self-concept structure with theory and previous research (e.g. Bryne, 1984, Bryne and Shavelson, 1986). Nevertheless, as pointed out previously, for the SC group these correlations were very low.

Contrary to predictions (Hypothesis 10) the two general academic self-concepts correlated significantly with achievement measures only in the NA group. This implies a lack of correspondence between children's actual achievement as measured by teacher grades and their academic self-concepts. The question of unrealistically high self-concepts has been dealt with in section 5.3.1. As already discussed there, this lack of correspondence between achievement measures and academic self-concepts may reflect an inability of failing students to accurately utilize classroom criteria to assess their strengths and weaknesses; it might be associated with the nature of the feedback received from parents and teachers; or alternatively may indicate a defense mechanism on the part of failing children to protect their self-esteem.

As expected (Hypothesis 12), global self-esteem, as measured by PCG, was not found to correlate with achievement measures in any of the groups, although persistent correlations of about 0.20 have been reported between achievement measures and general self-esteem by other researchers (Coopersmith, 1967; Hansford and Hattie, 1982; Rubin, 1978). However, the substantial positive correlations between the four academic self-concept scales and global self-esteem (r s between 0.25 to 0.35 for NA, and 0.39 to 0.46 for SC) point out that the impact of achievement on global self-esteem operates mainly through the more specific self-concepts of academic ability, therefore a

low perceived academic self-concept would be directly related to feelings of self worth. (Bachman and O'Malley, 1977; Bachman and O'Malley, 1986; Maruyama and al., 1981). A similar pattern of correlations is reported by Flouris (1989) who found low correlations between general self-esteem and achievement measures in maths and verbal areas, but significant correlations ranging from 0.33 to 0.40 between verbal and maths self-concepts and general self-esteem. It should be noted that the correlations between academic self-concepts and global self-esteem found in this study in SC group were higher in comparison with the other two groups, a fact which points out that the extent to which children in this group like themselves as persons may be intimately related with their perceptions of their cognitive competence.

No such significant correlations between academic self-concepts and global self-esteem were found for the LA group implying that for children in this group, academic self-concepts may not be the main or an important basis for their global self-worth feelings or alternatively that children tried to protect their self-esteem by valuing non-academic aspects. Therefore Hypothesis 13, predicting that there will be significant correlations between academic self-concepts and global self-esteem, was confirmed for NA and SC groups only.

5.4.2 IAR scales:

Correlations between the success and failure subscales of the IAR were either very low or negative. This is in accordance with the findings of Crandall et al (1965) who argued that self-attributions of responsibility in success and failure conditions are nearly independent and demonstrated that the success (I+) and failure (I-) subscales of the IAR are nearly uncorrelated. More recent research also points that attributions of success differ from those of failure in important ways (Covington and Omelich, 1979a, 1979b). The results of the correlational analyses between IAR and achievement measures strengthen the results of the analyses of covariance by showing substantial differences between groups. For the RC group achievement measures correlated positively and

significantly with total scores on the IAR, while when the subgroups were considered correlation coefficients contained lower absolute values as would be expected from the reduced sample sizes of the three groups. The only significant correlation was between IAR and Math achievement ($r = 0.30, p < .05$) in the LA group.

The success subscale (I+) correlated significantly with both achievement measures in the NA group. No other significant correlations were observed. However, correlations between achievement measures and the success subscales were in the positive direction, while those between achievement measures and failure subscales were in the negative direction. Similar relations between achievement measures and IAR subscales appeared in the LA group. The negative correlations between the failure subscale and achievement measures found in NA and LA groups seemed to indicate that the less willing children were to attribute their failures to themselves the better they performed academically. Therefore Hypothesis 15 predicting substantial correlations between achievement measures, IAR total and the success subscales was partially confirmed for NA and LA groups.

The opposite pattern was observed in the SC group where correlations between achievement measures and the failure subscales were positive, while those between achievement measures and success subscales were negative. Verbal Achievement correlated positively and significantly with I- subscale ($r = 0.35, p < .05$) and with I-E subscale ($r = 0.31, p < .05$).

This pattern of attributions highlights the differences between the groups. Children in the NA and LA groups seem to hold similar attributional patterns and adopt what has been termed a 'healthy' attributional style, by accepting responsibility for their successes rather than their failures. SC children, on the other hand, seem to accept responsibility for their failures rather than their successes, at least as regards verbal achievement.

At the level of specific attributions the two groups differed again in their pattern of correlations. It is noteworthy that for ability attributions for both success and failure situations, correlation coefficients were very low and non-significant in all groups

implying that children did not use ability attributions to explain either their successes or their failures.

Success/ability attributions appeared unrelated to achievement measures in all groups, indicating that children regarded their academic successes as a result of effort rather than ability. In addition, for the SC group these correlations were negative, showing that children in this group attributed their academic successes to external rather than internal factors.

However, in relation to ability attributions for failure situations (I-A), for the NA and LA groups, correlation coefficients were negative and very low (- 0.04 to -0.08), for the SC they were positive and substantially higher (0.17 to 0.25). Thus, it seems that although SC children were as unwilling as those in NA and LA groups to attribute their failures to lack of ability, they did it more often than children in the other two groups.

The somehow stronger correlations between effort attributions and achievement measures imply that children appear to attribute their successes and failures to effort rather than to ability. This might be a result of the age range included in this study as argued before or a mirror internalization of teacher standards who seem to stress effort rather than ability.

5.4.3 Relations between Self-Concept and Locus of Control/Causal Attributions:

The pattern of correlations between IAR and self-concept scales appear similar in all three groups. As predicted (Hypothesis 14) correlations were stronger between IAR subscales and the academic self-concept scales rather than the global self-esteem. This was to be expected because IAR measures attributions to academic situations and as suggested by Weiner (1980), and Stipek and Weisz (1981) attributional dispositions may be specific to particular settings.

The success subscale (I+) correlated significantly and positively with PCE, PCA and the SDQR in the NA group ($r = 0.18$ to 0.29), with the PCE in LA group ($r = 0.38$),

and with the PCE, SDQR and SDQM in SC group ($r = 0.31$ to 0.42). In all three groups, there were non-significant negative correlations between self concept scales and the failure subscale, implying that a positive self-concept is significantly correlated with the tendency to accept responsibility for successful outcomes and to attribute failures externally.

Correlations between academic self-concept scales and success/ability attributions were again significant. In the NA group the success/ability scale correlated significantly with PCE, PCA and SDQR ($r = 0.20$ to 0.23 , $p < .001$). In the LA group there was a significant correlation between I+A and PCE only ($r = 0.32$, $p < .05$), while in SC group there were significant correlations between I+A and PCE and the global self-esteem scale (PCG). The success/effort scale (I+E) correlated significantly with PCE in all three groups. In addition, in SC group there were significant correlations between I+E and the two subject specific scales (SDQR, SDQM). There were no significant correlations between academic self-concepts and failure/ability (I-A) or failure/effort (I-E) scales, besides these correlations were negative. Only in LA group, there was a significant negative correlation between I-A and SDQR ($r = 0.43$, $p < .001$). These results are similar to those reported in the literature by Marsh and colleagues (Marsh, Smith and Barnes, 1983; Marsh Relich and Smith, 1983). The difference with the above mentioned studies being that where Marsh et al. found positive correlations with failure/effort attributions, implying that a positive self-concept correlated significantly with attributions of responsibility to lack of effort, in the present study these correlations were negative. The unwillingness of subjects to attribute failure to lack of effort further emphasize the importance of effort attributions for the sample of this study and the centrality of this factor for a positive self-definition.

5.4.4 Path Analysis:

In general the results of path analysis confirmed and augmented the findings of correlational analysis by supporting the hypothesized relations among the constructs of interest.

The findings for the RC group showed that the model had moderate precision in terms of explaining the variability of the constructs studied. Despite the moderate precision of results, however, the findings were informative. Taken together the results show that, as regards RC children, the variables directly affected by academic achievement were the specific self-concepts (SDQR and SDQM) which in turn influenced the more general academic self-concepts (PCE and PCA) and through them the global self-esteem. Consistent with the External/Internal frame of reference described by Marsh (1986c) Verbal Achievement (ACV) for example, had direct positive effects on SDQR, while the effects of ACV on SDQM were negative. The somehow stronger path coefficient between ACM and SDQM (0.51) as compared to the equivalent path between ACV - SDQR may indicate that a greater importance is assigned to this subject by children in RC group. This relatively greater importance of Mathematics might be associated with a belief that success in this subject is more due to ability than success in other areas of the curriculum. There is some evidence that among American parents and older children, performance in Mathematics is more likely to be attributed to ability, whereas performance in English is more likely to be attributed to effort (Eccles et al., 1984).

The finding from correlational analysis of no significant correlation between global self-esteem (PCG) and achievement measures was confirmed as there was no direct path between achievement measures and PCG. Global self-esteem was only indirectly influenced by achievement through the academic self-concepts (PCE and PCA). The two general academic self-concepts (PCE and PCA) appeared also directly influenced by subject-specific self-concepts (SDQR and SDQM) rather than achievement measures. There were only direct paths from ACM to PCE and PCA implying direct influences of achievement in Mathematics on Perceived Competence Evaluation apart

from the indirect influences through the subject-specific self-concepts. These findings confirm the predictions of Hypotheses 10 - 13 by lending support to the notion of a hierarchical nature of self-concept where the hierarchy moves from specific to more general aspects of self.

Acceptance of responsibility for academic outcomes (I+ and I-) appeared indirectly influenced by achievement through the academic self-concepts and more particularly PCE and SDQR. There was only one direct path between ACM and I+ indicating that success in Maths is positively related to attributing responsibility for the outcome to oneself. These results point to the direction that self-concept plays a mediating role between locus of control and achievement. Children with a positive self-concept seem to attribute their successful learning outcomes to internal factors, while they attribute their failures to external factors. The fact that there were no paths between global self-esteem and the two locus of control scales indicated that academic locus of control was only influenced by academic and not global self-esteem.

It should be noted that the path between SDQR and I+ was positive, while the path between SDQR and I- was negative. This seems to confirm a previous finding that children in this particular group seem to accept responsibility for their successes rather than their failures.

5.4.4.1 Comparisons between groups :

Comparing the three models of the respective ability groups with the basic model and among themselves, we can see important qualitative differences which support the previous findings of significant differences between the groups.

The largest percentage of variance explained was in the case of LA group (31.5%). This suggests that a large part of the variance in self-concept and locus of control was left unaccounted by the model. This seems quite reasonable as both self constructs are the result of multiple predictors.

In all three groups a very small amount of variance in SDQR was predicted by achievement. In the case of SDQM the percentage of variance explained was much higher and varied from 43.6% in SC to 9.2% in NA group. This might indicate that Maths self-concept was considered a particularly important facet, probably due to the emphasis put on maths achievement as a sign of intelligence and abstract reasoning capacity. Among the several domains PCE and PCA were the best explained facets, especially in the case of SC and LA groups.

For global self-esteem (PCG) the differences between groups were substantial. In the SC group 25.8% of the variance was explained by the model, showing that for this particular group the links between achievement and global self-esteem were strong. The opposite seemed to hold true for the LA group in which the amount of variance explained for PCG was less than 10%. These results confirm the findings from the other analyses that SC children seem to base their judgements of their worth as a person on their academic success.

The variance in I+ and I- was again better accounted for in SC group, while the small percentage of variance explained in the other groups shows that for these groups, factors outside the model account for the variance in these constructs.

Taken together these findings suggest that achievement is a better predictor of self constructs in the below average group and special class children than in normally achieving children.

In respect to the relations between exogenous and endogenous variables, the results of path analysis indicated some interesting and systematic differences in the patterns of relations among constructs. While Maths achievement (ACM) had significant and relatively strong effect on SDQM in NA and LA groups, it had no significant effect for SC group where the effect of achievement on SDQM was mediated through the SDQR. Verbal achievement (ACV), on the other hand, did not have any significant direct effect on SDQR in NA group, but its effects were direct and substantial in SC and LA groups.

The hierarchical nature of self-concept and its content specificity was best illustrated in the path diagram of the RC group where there were significant paths from achievement measures to their equivalent subject specific self-concepts, from them to general academic self-concepts and from there again to global self-esteem. In the subgroups the direction of influences seemed different as indicated by non-significant paths. For example, in NA group the path between ACV - SDQR was non-significant, while there was a direct influence of Verbal Achievement on PCE. In contrast, in SC group the path between ACM - SDQM was non-significant but there was a direct path between SDQM and PCE. This might indicate that children in the different subgroups are differentially influenced by their achievement in different subject in forming their general academic self-concepts. Whereas for NA children achievement in Mathematics seemed to be more important, for children in SC group Verbal achievement seemed to count more. Nevertheless, the presumed general direction of relations between achievement and self-concept was supported by all models, as academic achievement directly influenced academic self-concepts and through them global self-esteem. The fact that the paths from academic self-concepts (PCE and PCA) to global self-esteem (PCG) were strongest in SC groups confirms the previous finding that for this particular group the impact of academic self-concept on overall evaluation of the self is greater.

Achievement did seem to influence the locus of control constructs mainly indirectly through academic self-concepts. This is in accordance with the theoretical model of this study predicting that the causal ordering of variables was from academic achievement to self-concept to locus of control. The only direct path between achievement and locus of control was a negative path between ACV and I- in SC group implying that a failure in Verbal Achievement was positively related to an inclination to attribute responsibility for it to external factors rather than oneself, a result which again confirms previous findings. It could be that as children in SC group were mainly referred to placement on the basis of their difficulties in Verbal Achievement, this construct had directly influenced their acceptance of responsibility for academic outcomes in this area.

5.4 Summary of findings :

In summarizing the findings, the following picture emerges. SC children seem to hold lower perceptions of ability in Verbal and Math areas (SDQR and SDQM) and in general academic self-concepts (PCE and PCA) as compared to the NA group. They appear also to hold a less positive academic self-concept (PCE) as compared to the LA group. These diminished levels of confidence in their academic abilities seem to have greatly influenced their global self-esteem as SC children differ significantly from both NA and LA groups by holding less positive overall evaluations of themselves. The substantial correlations between academic self-concepts and PCG, and the results of path analysis which shows that the SC group had the largest percentage of variance in PCG explained by the model as compared to the other two groups confirms the view that academic self-concept substantially influences global self-esteem, at least for this particular group. LA children appeared to hold equally negative academic self-perceptions of themselves as compared to the NA group but these beliefs did not seem to influence their global self-esteem.

Although achievement seems to have a substantial effect on global self-esteem for all the children in this sample, this effect seems to occur only indirectly via academic self-concepts, a finding which is consistent with the predictions made in this study.

Children in LA and SC groups attributed their successes more to external factors than to themselves as compared with the NA group. SC children differed from the LA group as well by being more external. The NA and LA groups were also more internal in their acceptance of responsibility for failures as compared with SC group. The two groups did not differ among themselves, but they did differ significantly from the SC group, in which children again showed a tendency to ascribe their failures to external factors more than the other two groups did.

Children in all groups used mainly effort attributions to explain their successes. However, differences between groups were evident in the kind of attributions used to explain failures. Whereas NA and LA children used mainly lack of effort to explain their failures, SC children attributed their failures externally. In addition, SC children

used lack of ability rather than lack of effort to explain their failures which they attributed to themselves. In the light of the lower self-perceptions that SC children appear to hold about themselves it seems hardly surprising that they seem to believe that success in school, when it does occur, tends to be caused by external factors rather than internal. The fact that failure was also regarded as a result of external factors, puts them in the place of 'helpless' learners and has serious implications for their future motivation and persistence on academic tasks. In contrast, LA children seemed to hold the same attributional patterns as the NA group, thus attributing successes to their efforts and failures externally.

Taken together these findings seem to suggest that repeated failure is a decisive factor in the determination of the self-concept of academic ability, and an important factor in shaping a child's attributional pattern. However, the differences between SC and LA children also seem to imply that although the actual skills or the attributes that the person has represent an important if not a major contributing factor, the importance of other factors should not be underestimated. Such factors are probably the stigma which accompanies Special Class placement, the feedback and expectations of significant others, one's basic comparison group and a large array of personal variables. Within the context of formal schooling, significant others most generally include peers, parents and teachers. While parents are obviously not physically present at school, the feedback by parents might be extremely important in the formation of academic self-concept and attributional beliefs. All these factors seem to play a role in making SC children believe that academic outcomes are beyond their control. Such beliefs would lead them to display progressively less motivation in achievement situations which in turn would increase the likelihood of failure in the future. Therefore, the effect of low academic self-concept, and the frequently associated feelings of learned helplessness, may result in children giving up easily in the face of difficulty and never persisting long enough to discover that success may be possible (Bar-Tal, 1978; Butkowsky and Willows, 1980).

Interestingly, the differences in self-concept and locus of control evidenced in grade 3 did not seem to increase with age. The only significant age differences were found in relation to PCE, in which SC children seemed to develop more negative academic self-concepts as they grew older. The lack of age differences in the other self-concept scales implies that the greater number of failure experiences that the older children might have did not necessarily contributed to increasingly negative self-concepts. Significant age differences were found in relation to locus of control in the NA and LA groups but not in the SC group. Older children in NA and LA groups were more internal ~~from~~ younger ones but no such trend was evident in SC children.

Contrary to previous evidence that girls consistently underestimate their abilities while boys err in the direction of overestimation, no significant sex differences were noted in this study in relation to self-concept. The only familiar sex difference which was replicated with the present sample was in relation to Maths self-concept (SDQM) where girls obtained lower scores than boys.

Significant sex differences were found in relation to failure/ability (I-A) subscale in NA and LA groups indicating that boys in these groups attributed their failures to lack of ability more than did girls. This is an interesting finding which needs further research. The reverse pattern was found in SC, where in accordance with previous findings girls appeared to attribute their failures to lack of ability more than boys did.

In terms of the hypotheses put forward in this study the results were as follows:

Hypotheses 1a and 1b predicting no significant differences between groups on global self worth were not confirmed as SC children held significantly less positive evaluations of themselves from both NA and LA groups. However, no differences were found between NA and LA groups.

The expectation that SC children will be significantly different from RC children on measures of academic self-concept (Hypothesis 2a) was confirmed. Similarly, the prediction that SC and LA children will differ from the NA group on measures of academic self-concept (Hypothesis 2b) was also confirmed as these groups were found

children. These characteristics are marked by a relatively negative self-concept and also negative global self-esteem. Although poor achievement may have greatly contributed to the development of a negative self-concept, achievement alone cannot account for it as the differences between SC and LA children proves. It appears that LA children who also possess more negative academic self-perceptions in subject specific self-concepts and competence evaluation as compared with the NA group, seemed to be able to compensate for that by deriving confidence from other areas. Therefore, their global self-esteem did not seem to be affected by these negative self-perceptions neither did the pattern of causal attributions.

The extent to which pull-out services contribute to self-esteem difficulties is unknown. There is some evidence that children with special needs resent and are distressed by removal from ordinary classes and that they want to experience success within their regular classrooms. The special class provision, besides the fact that it may seem as a way of marginalising this group, it may also provide these children with a low-status curriculum which restricts rather than enhances their future academic opportunities. In either case, the result would be more negative self-concept as compared with children in ordinary classroom. Additional evidence for this argument comes from studies on ability grouping. Reviewers of ability grouping effects on academic achievement and self-esteem have concluded that superior students may benefit from this method, but lower ranking students may be hurt. The primary areas of concern are exposure to undemanding curriculum and the social stigma attached to students in low-ability groups (Bandura, 1982). Thus, it seems clear that special class placement is likely to have both a direct effect of self-concept and attributional style by the lower status attached to it, and an indirect effect by providing less demanding academic tasks and therefore, further sustaining low academic achievement. It is reasoned that the above argument would apply even more in Greece where those considered to have special educational needs are still by definition a devalued group.

Special class placement may also influence children by affecting significant others' expectations, the amount and type of feedback they give and the cognitive and

increasing linear trend in IAR and subscale scores was confirmed for the NA and LA groups, while in the SC group no such increase in internality scores was evident.

5.6 Conclusions and Educational Implications:

The most significant theoretical implication of this study lies in its direct demonstration that SC children differ from their peers attending ordinary classes on measures of self-concept and locus of control and that this difference cannot be explained solely by differences in intellectual capacity.

The results of this investigation add to the accumulating literature indicating that SC children appear to develop a distinctively different set of affective characteristics than normally achieving children and show this to be true also for the sample of Greek

individuals exert little effort or give up easily at a task, even if they are able to do it. Such an approach is hardly conducive to optimal learning and performance. Bloom (1976) argues that when children believe that their abilities are inadequate, they are likely to approach learning with reluctance, dislike or even avoidance; their motivation and task persistence necessary for success in school will be depressed. Successful learning requires a belief that one has sufficient ability to complete the task (Brookover et al., 1967). It also requires the belief that successes are due to one's effort and abilities, rather than being caused by uncontrolled factors (Dweck, 1975). If a child is convinced of his inadequacy, then "*...he has little patience when he encounters difficulties, and takes little care and thoroughness in accomplishing the task*" (Bloom, 1977, pp.194-195).

A positive self-concept, then, clearly appears to be an important component of school learning. Conversely, negative self-perceptions of academic ability are considered functionally limiting factors in school success (Brookover et al., 1965; 1967). The implication of holding relatively negative self-concepts will seem to be a perpetuation of failure experiences of children who hold them by investing progressively less amount of effort in future tasks. This spiralling relationship between self-cognitions and academic performance may become at some point extremely difficult to reverse. Especially SC children would seem more vulnerable to the danger of self-derogating cognitions and their concomitant results.

In addition to self-concept, perceptions of control have an influence on the individual's motivational and cognitive reactions. Motivationally, it seems probable that the extent to which children believe that they have control over their environment affects their motivation to perform within that environment. Children who believe that their behaviour accounts for their academic successes and failures, are more likely to show initiative in academic performance, and persistence in the face of failure. Conversely, children who feel that they cannot change events and that their successes and failures are dependent on other people or circumstances have little reason to exert task-oriented behaviour. Successes attributed to external factors would bring little satisfaction and

may be seen as incongruent with existing self-perceptions. Although success and failure per se are important in shaping children's' perceptions of their abilities, they may be less important than the perception of the causes of such success or failure. Moreover, success and failure may have different meanings for different children. SC children may not necessarily interpret success as reflecting something positive about themselves, and failures may not be viewed as something that can be overcome with effort. In such a case, success will not enhance self-perceptions of competence or bring satisfaction as this is likely to happen only if the child accepts responsibility for that success.

The finding that SC and LA children are more external in their control orientation for success influences not only their achievement motivation but also their emotional reactions. Weiner (1986) has shown that some emotional responses to achievement outcomes are linked to particular attributions. For example pride is thought to be associated with perceptions of internal causes and not with external ones. SC and LA children, then who were more likely to attribute their successes to external causes, would be expected to feel less pride as a response to them. Specific attributions have shown to have important implications for future expectations and behaviour. Generally it is stressed in the literature that attributing success to ability is associated with expectations of future success and a willingness to approach new tasks. In contrast, attributing failure to low ability is predicted to be associated with low expectations for future success and a desire to avoid future achievement tasks. However, this may not be entirely true for younger children as the concept of ability as capacity develops progressively. One should also keep in mind the cultural emphasis upon ability or effort as causes of success.

For the sample of the present investigation, it seems that effort attributions were the most important. The fact that LA and NA children attributed the academic outcomes mainly to effort would have as a result a greater persistence on future tasks (Dweck, 1975). SC children, on the other hand, used mainly external attributions. This would

not only result in less pleasure from doing well at achievement tasks, but would keep them from trying harder.

Moreover, the finding that SC children attribute their failures more to a lack of ability than effort has important implications for their future motivation and task persistence. Weiner (1979) argues that after failure, an individual is more likely to expect failure to recur when the outcome is ascribed to low ability rather than lack of effort. If children are convinced that their failures are caused by a stable internal factor, such as ability, they would see no point in trying harder. There is some empirical evidence that children's actual task performance can be improved by altering their beliefs about the causes of their performance. Dweck (1975) found that nonpersistent children who were taught to attribute their failures to a lack of effort rather than to a lack of ability demonstrated significantly better task performance than nonpersisters who were not given attribution training.

As already discussed in Chapter 4, the SC children seem to adopt a helpless attributional style by attributing both their successes and their failures to external factors. Their attributional style combined with a negative self-concept and low self-esteem seems to suggest that they view their difficulties as failures and indicative of low ability and as such insurmountable. It is possible that they view further effort as futile and probable as further documentation of their inadequate ability. The differences between LA and SC children in terms of the attributions used point out that at least to some extent the special class placement and everything that accompanies it may have served to shape their attributional style.

It would be of utmost importance to investigate more fully in further research whether the learned helplessness displayed by SC children is specific to the deficit area or is generalized across academic tasks as this would have major implications for the overall academic functioning of SC children.

The findings of the present study support previous literature which stressed the importance of the relationship between academic success and failure and the affective characteristics of the learner. However, inferences regarding the causal role of academic

achievement in shaping the academic self-concept and locus of control have been limited due to the cross-sectional character of the present investigation along with the fact that all constructs were measured at the same time. It would seem probable that the accumulated failure experiences of these children involving comparisons with others and feedback about their academic performance in the form of class grades and comments from teachers and others, would lead to negative self-perceptions and external locus of control beliefs. At the same time it is also likely that negative self-concepts and external locus of control beliefs should lead to further failure experiences. From that time on the interplay between achievement and affective characteristics is probably reciprocal. Stanovich (1986) refers to this reciprocal effect as the "Mathew effect", in which competent achievers do better, and poor achievers become more skill-deficient over time. Clearly, then the consequences of negative affective characteristics in SC and low achieving children may lie in the perpetuation of their low levels of academic achievement. Failure to attenuate the influence of negative affective development may influence future learning and have consequences beyond school learning. Underachievers may perpetuate failure by lowering their aspirations or by adopting an overcautious style of learning which could avoid exposure to threatening situations. Either response is likely to reduce opportunities for independent and active learning styles and to place limits on achievement.

A number of steps may be taken to optimize learning for Special Class and Low Achieving students and helping them to overcome their difficulties. Simply providing help with their academic difficulties does not seem enough as this study clearly shows that failures experiences are not the only source of problems.

The cultural emphasis placed on academic achievement which puts academic self-concept in a central position and probably plays a decisive part in shaping global self-esteem could not be easily altered. However, it is possible to emphasize the importance of other dimensions of school life and guide children towards learning to derive satisfaction and self-esteem from areas in which they can succeed. Admittedly, the Greek national curriculum is not particularly helpful, as the emphasis is placed on the

basic subjects such as Mathematics and Language, at the expense of other subjects such as music, art etc., from which children could probably derive both pleasure and the satisfaction of success.

In addition, it would be helpful if children are prompted to redefine academic success. As pointed out in the context of the Greek Educational system the emphasis is on being academically able relative to others, a fact which seems to orient children towards 'performance goals'. Such an orientation would be expected to be highly associated with a lesser involvement in learning for its own sake and with a belief in the importance of ability as a cause of academic success. The danger of such beliefs has already been discussed. Especially for failing students expectations of incompetence would more likely result in reduced effort. One might consider the usefulness of changing pupils' goals and orienting them towards constructing their learning at school in a self-referenced perspective, aiming at the gaining of understanding rather than outperforming their peers or proving their superior competence.

Since it is virtually impossible in any classroom to avoid failure experiences for some children, it seems important to recognize failure as a necessary component of the learning process and not as a damaging experience to be avoided. Not only must efforts be directed at providing positive success experiences for children with difficulties, but they must also be directed at teaching these children to think more adaptively about their failures. Support for this comes from studies showing that 'success only' experiences were not as effective in inducing lasting behaviour change as the combination of success, failure and attribution retraining (Dweck, 1975). Besides, the overzealous use of teacher praise may be detrimental to the children with learning difficulties if praise is unrelated to the child's effort and performance level (Fincham and Barling, 1978).

One of the goals of special education for children with learning difficulties may be to help them to begin to 'own' their successes thereby raising their self-esteem. It is argued that by modifying what underachievers and students with learning difficulties say about themselves, it is possible to increase their motivation, persistence and expectancies of success (Ames and Ames, 1984; Covington and Omelich, 1981;

Weiner, 1979), academic responsibility (Diener and Dweck, 1978) and self-esteem (Ames, 1978). It is held that particularly attributions made to uncontrollable, supposedly unchangeable factors can and should be changed by encouraging children to attribute their failures to factors over which they have control. A number of recent investigations have been successful in demonstrating that children's achievement behaviour may be altered by modifying their causal attributions of success and failure. Dweck (1975) and others (Andrews and Debus, 1978) have already shown that children who are given attribution retraining and learn to attribute failure to insufficient effort, show decreases in helplessness deficits in cognitive tasks and that the effects of retraining persist for several months. However, there are those who question the assumption that effort alone will improve performance. It has been suggested that an overemphasis on effort attributions in order to increase goal expectancy and motivation may increase feelings of inadequate ability. Bandura (1977) argues that continuous urging to try harder may serve to increase helplessness if the individual does not possess the personal resources for coping with the academic demands. It might be more appropriate to acknowledge realistically low self-perceptions of ability or beliefs of insufficient effort, and define future goal outcomes in terms of a need to develop more appropriate self-management and task-related skills (Cullen, 1985). Attribution retraining, then, should be conducted with an understanding of the particular circumstances of the individual child and a knowledge of his abilities, so that children learn to make attributions that are both optimistic and reasonable.

There are also those who used reinforcement programs to remediate the maladaptive attributions of failing children. Though limited, comparative studies between attribution retraining and reinforcement showed that attribution retraining alone, or in conjunction with some type of reinforcement schedule was superior to reinforcement procedures (Canino, 1981). The effectiveness of reattribution training would appear to lie in its objectives. Again such a program is not designed to provide the children with an inaccurate perception of self-ability. Rather it should aim in systematically teaching children to understand the origins of their failures. This would involve a) a realistic

appraisal of what the task requires in terms of problem-solving skills; and b) teaching the child to modify what he says about failure and to emphasize motivation rather than ability as a determinant of failure.

It has been argued that the helplessness phenomenon of cognitive, motivational and emotional deficits seems to be least evident in children who externalize the cause of academic failures and most observable in those who internalize it (Canino, 1981). Therefore, a variety of treatment approaches may be employed according to the type of helplessness displayed. It is important to identify and explicate the nature and characteristics associated with learned helplessness first. Helplessness produced from internal-stable attributions (e.g. ability) has more debilitating and long lasting effects than does helplessness caused by either internal-unstable (e.g. effort) or external attributions (e.g. luck or task difficulty). For subjects experiencing helplessness caused by an external variable attribution, as is the case with SC children in this study, the application of response-dependent success has been an effective intervention (Seligman et al., 1979, Miller and Norman, 1979). Also the extent of the generalization of the helplessness phenomenon across situations, tasks and time is important. For example, the belief that failure at maths is due to a lack of ability that is specific to maths will have different consequences from the belief that the lack of ability is common to all subjects. There is some evidence that 'externals' appear not only to use attributional patterns that induce helplessness but they also make helplessness more generalized (Heckhausen, 1987). Such a state of affairs is found to be a risk factor that could cause depression when adverse events occur and accumulate.

5.7 Limitations of this Study:

The present investigation has important limitations that require further consideration. The most important, perhaps, is that the sample was drawn from a single metropolitan area (Athens). While it is speculated that the city has enough diversity to warrant a

relative generalization of results, a more broadly representative national sample would be required to fully investigate the questions posed in this study.

Second, the instruments used were all self-report paper and pencil type questionnaires. The limitations of this technique were discussed in section 3.2.4, Chapter 3. The extent to which children were inclined to respond by presenting an overly positive view of themselves is unknown. In addition, the methodological irregularity of administering the questionnaires aloud may have influenced the outcome of the data. Hearing a person other than oneself read the questions and seeing the expression of fellow students as they reacted hearing the same items may have contaminated the subjects' initial reaction to the individual items. However, clear differences do exist between groups within the schools but not between schools.

Third, the group comparison strategy employed in this study is limited in that it largely masks the heterogeneity and variability among individual children.

Fourth the cross-sectional and correlational nature of the study does not allow any definite statements about the causal direction of the variables of interest. Longitudinal investigations will be needed to fully explore the relationships among these constructs.

Finally, the IAR used to measure locus of control and causal ascriptions may have failed to include factors that were relevant to children's personal experiences.

5.8 Future Research:

As recent criticisms of the locus of control construct have called attention to the fact that items used to measure this construct tend to confound perceptions of competence, causality and control (Ickes and Layden, 1978; Weisz and Stipek, 1982) future research will be needed to further differentiate between these aspects.

In light of the sex differences uncovered in this study in relation to causal ascriptions, it would be interesting to investigate them further with a larger and more representative sample. It could be that the general nature of the IAR is potentially masking larger sex differences for particular subject areas. Perhaps, boys, on average, assume more

responsibility for performance in maths (because of their socialization history), whereas girls assume more responsibility for verbal tasks. Future investigations concerning sex differences in locus of control and causal ascriptions may be most fruitful, therefore, if locus of control measures for specific academic areas are developed and used.

Future research might also examine the consistency in children's attributions for different task outcomes and whether attributions used in academic settings are specific to it or generalize to other spheres as well. This would be particularly interesting in relation to failing and failure-prone children. Such investigation may prove useful in order to improve the effectiveness of attribution retraining programmes.

APPENDICES

Appendix 1: List of Abbreviations.

LD: Learning Disabled

SC: Special Class

RC: Regular Class

NA: Normally Achieving (Children)

LA: Low Achieving (Children)

PCS: Perceived Competence Scale

PCE: Perceived Competence Evaluation

PCA: Perceived Competence Affect

PCG: Global Self-Esteem

SDQ: Self Description Questionnaire

SDQR: Verbal (Reading) Self-Concept

SDQM: Maths Self-Concept

IAR: Intellectual Achievement Responsibility Questionnaire

I+: Responsibility for Success

I-: Responsibility for Failure

I+A: Success Ability

I-A: Failure Ability

I+E: Success Effort

I-E: Failure Effort

ACV: Verbal Achievement

ACM: Maths Achievement

Appendix 2:

Distribution of Pilot Study Sample by Group, Grade Level and Sex.

Grades	RC (n = 144)		SC (n = 24)	
	Boys	Girls	Boys	Girls
4	20	20	4	4
5	20	20	4	4
6	20	20	4	4
Total	60	60	12	12

RC: Regular Class; SC: Special Class.

Appendix 3:

Means, Standard Deviations, Skewness and Kurtosis of all the Variables (N = 424).

Variables	M	SD	Skewness	Kurtosis
ACV	3.29	1.26	- 0.14	- 1.05
ACM	3.27	1.29	- 0.20	- 1.03
PCE	10.99	2.89	- 0.34	- 0.65
PCA	7.12	1.69	- 0.31	- 0.85
PCG	7.09	1.84	- 0.33	- 0.59
SDQR	21.75	4.03	- 1.53	2.26
SDQM	23.43	6.35	- 1.00	0.14
IARtotal	21.93	4.27	- 0.29	- 0.38
I+	12.49	2.74	- 1.29	1.95
I-	9.41	3.07	- 0.43	- 0.38
I+A	4.62	1.29	- 1.09	1.14
I-A	3.18	1.17	- 0.05	- 0.28
I+E	4.79	1.26	- 1.31	1.70
I-E	3.85	1.80	- 0.54	- 0.78

Appendix 4:

Perceived Competence Scale for Children (PCS):

1. Some kids feel that they are very good at their school work. BUT Other kids worry about whether they can do the school work assigned to them. *PCA*
2. Some kids feel that there are a lot of things about themselves that they would change if they could. BUT Other kids would like to stay pretty much the same. *PCG*
3. Some kids feel like they are just as smart as other kids their age. BUT Other kids aren't so sure and wonder if they are as smart. *PCA*
4. Some kids are pretty sure of themselves. BUT Other kids are not very sure of themselves. *PCG*
5. Some kids are pretty slow in finishing their school work. BUT Other kids can do their school work quickly. *PCE*
6. Some kids feel good about the way they act. BUT Other kids wish they acted differently. *PCG*
7. Some kids often forget what they learn. BUT Other kids can remember things easily. *PCE*
8. Some kids think that may be they are not a very good person. BUT Other kids are pretty sure that they are a good person. *PCE*

9. Some kids like school because they do well in class. BUT Other kids don't like school because they aren't doing well. *P C A*

10. Some kids are very happy being the way they are. BUT Other kids wish they were different. *P C G*

11. Some kids wish it was easier to understand what they read. BUT Other kids don't have any trouble understanding what they read. *P C E*

12. Some kids aren't very happy with the way they do a lot of things. BUT Other kids think the way they do things is fine. *P C E*

13. Some kids have trouble figuring out the answers in school. BUT Other kids almost always can figure out the answers. *P C E*

14. Some kids are usually sure that what they are doing is the right thing. BUT Other kids aren't so sure whether or not they are doing the right thing. *P C A*

Appendix 5:

Revised Items from Perceived Competence Scale (PCS).

Original Wording

10. Some kids are very happy being the way they are. BUT Other kids wish they were different.

12. Some kids aren't very happy with the way they do a lot of things. BUT Other kids think the way they do things is fine.

Back Translation from Greek

10. Some children are very pleased with themselves. BUT Other children would like to be different.

12. Some children are not pleased with the way they do certain things. BUT Other children think that the way they do certain things is the right one.

Appendix 6:

Self Description Questionnaire (SDQ1)

Name:

Age:

Grade:

This is a chance to look at yourself. It is not a test. There are no right answers and everyone will have different answers. Be sure that your answers show how you feel about yourself. PLEASE DO NOT TALK ABOUT YOUR ANSWERS WITH ANYONE ELSE. Your answers will be kept private and not shown to anyone.

When you are ready to begin, please listen carefully as I read the sentences and decide your answer. (You may read quietly to yourself as I read aloud.) There are five possible answers to each question --"True", "False", and three answers in between. There are five lines next to each sentence, one for each of the answers. The answers are written at the top of the lines. Choose your answer to a sentence and put a X in the line under the answer you choose. DO NOT say your answer out loud or talk about it with anyone else.

Before you start there are three examples below. Somebody has already answered two of these sentences to show you how to do it. In the third one you must choose your own answer and put in your own X.

	Sometimes False		sometimes True		Mostly True True
EXAMPLES	False	Mostly False	True	Mostly True	True
1. I like to read comic books.	-----	-----	-----	-----	---X--
(This child put a X in the box under the answer "true". This means he really likes to read comic books. If he did not like to read comic books very much, he would have answered "false" or "mostly false".)					
2. In general, I am neat and tidy.	-----	-----	---X--	-----	----
-(The child answered "Sometimes False, Sometimes True" because he is not very neat, but he is not very messy either.)					
3. I like to watch T.V.	-----	-----	-----	-----	-----

(For this sentence you have to choose the answer that is best for you. First you must decide if the sentence is "True" or "False" or somewhere in between. If you really like to watch T.V. a lot you would answer "True" by putting a tick in the last line. If you hate watching T.V. you would answer "False" by putting a tick in the first line. If your answer is somewhere in between then you would choose one of the other three lines.)

You should have ONE ANSWER and only one answer for each sentence. DO NOT leave out any of the sentences.

Now turn over the page and begin. Once you have started PLEASE DO NOT TALK.

SDQ

1. I get good marks in reading. (R)
2. My parents understand me. (P)
3. I have lots of friends. (F)
4. I like reading. (R)
5. Work in Mathematics is easy for me. (M)
6. I make friends easily. (F)
7. I am good at reading. (R)
8. I like my parents. (P)
9. I look forward to mathematics. (M)
10. I am interested in reading. (R)
11. My parents like me. (P)
12. I get good marks in mathematics. (M)
13. I get along with other kids easily. (F)
14. If I have children of my own I want to bring them up like my parents raised me. (P)
15. I am interested in mathematics. (M)
16. I am easy to like. (F)
17. I enjoy doing work in reading. (R)
18. My parents and I spend a lot of time together. (P)
19. I learn things quickly in mathematics. (M)
20. Other kids want me to be their friend. (F)
21. Work in reading is easy for me. (R)
22. My parents are easy to talk to. (P)
23. I like mathematics. (M)
24. I have more friends than most other kids. (F)
25. I look forward to reading. (R)
26. I get along well with my parents. (P)
27. I am good at mathematics. (M)
28. I am popular with kids of my own age. (F)

29. My parents and I have a lot of fun together. (P)

30. I enjoy doing work in mathematics. (M)

31. Most kids like me. (F)

32. I learn things quickly in reading. (R)

Appendix 7:

Revised items from Self Description Questionnaire (SDQ).

Original Wording:

22. My parents are easy to talk to.

Back Translation from Greek:

22. My parents listen willingly when I speak to them.

Appendix 8:

IAR

I have some sentences here about a lot of things that happen to children of your age. I would like to know what you think about them. This IS NOT A TEST. Therefore, there are no right or wrong answers. Children are different from each other, each of you will be putting down different things.

I will be reading each sentence. Listen carefully and decide what applies to you. There are two answers for each sentence, a or b. Circle the one which is true for you.

CIRCLE ONE ANSWER ONLY.

1. When you do well on a test at school, is it more likely to be
 - a) because you studied for it, or **I+E**
 - b) because the test was especially easy?

2. When you have trouble understanding something in school, is it usually
 - a) because the teacher didn't explain it clearly, or
 - b) because you didn't listen carefully? **I-E**

3. When you read a story and can't remember much of it, is it usually
 - a) because the story wasn't well written, or
 - b) because you weren't interested in the story? **I-**

4. Suppose your parents say you are doing well at school. Is this likely
 - a) because your school work is good, or **I+**
 - b) because they are in good mood?

5. Suppose you did better than usual in a subject at school. Would it probably happen
 - a) because you tried harder, or **I+E**
 - b) because someone helped you?

6. When you loose at a game of cards or checkers, does it usual happen
 - a) because the other player is good at the game, or
 - b) because you don't play well? **I-A**

7. Suppose a person doesn't think you are very bright or clever.
a) can you make him change his mind if you try to, or **I-**
b) are there some people who think you're not very bright no matter what you do?
8. If you solve a puzzle quickly, is it
a) because it wasn't a very hard puzzle, or
b) because you worked on it carefully? **I+E**
9. If a boy or girl tells you that you are dumb, is it more likely that they say it
a) because they are mad at you, or
b) because what you did really wasn't very bright? **I-A**
10. Suppose you study to become a teacher, scientist or doctor and you fail. Do you think this would happen
a) because you didn't work hard enough, or **I-E**
b) because you needed some help, and other people didn't give it to you?
11. When you learn something quickly in school, is it usually
a) because you paid close attention, or **I+**
b) because the teacher explained it clearly?
12. If a teacher says to you, "Your work is fine". is it
a) something teachers usually say to encourage pupils, or
b) because you did a good job? **I+A**
13. When you find it hard to work arithmetic or math problems at school, is it
a) because you didn't study well enough before you tried them, or **I-E**
b) because the teacher gave problems that were too hard
14. When you forget something you heard in class, is it
a) because the teacher didn't explain it very well, or
b) because you didn't try very hard to remember? **I-E**
15. Suppose you weren't sure about the answer to a question your teacher asked you, but your answer turned out to be right. Is it likely to happen
a) because she wasn't as particular as usual, or
b) because you gave the best answer you could think of? **I+A**

16. When you read a story and remember most of it, is it usually

- a) because you were interested in the story, or **I+**
- b) because the story was well written?

17. If your parents tell you you are acting silly and not thinking clearly, is it more likely to be

- a) because of something you did, or **I-A**
- b) because they happen to be feeling cranky?

18. When you don't do well on a test at school, is it

- a) because the test was especially hard, or
- b) because you didn't study for it? **I-E**

19. When you win at a game of cards or checkers, does it happen

- a) because you play real well, or **I+A**
- b) because the other person doesn't play well?

20. If people think you are bright or clever, is it

- a) because they happen to like you, or
- b) because you usually act that way? **I+A**

21. Suppose you don't do as well as usual in a subject at school. Would this probably happen

- a) because you weren't as careful as usual, or **I-E**
- b) because somebody bothered you and kept you from working?

22. If a boy or girl tells you that you are bright, is it usually

- a) because you thought up a good idea, or **I+A**
- b) because they like you?

23. Suppose you became a famous teacher, scientist or doctor. Do you think this would happen

- a) because other people helped you when you needed it, or
- b) because you worked very hard? **I+E**

24. Suppose your parents say you aren't doing well in your school work. Is this likely to happen more

- a) because your work isn't very good, or **I-A**
- b) because they are feeling cranky?

25. Suppose you are showing a friend how to play a game and he has trouble with it. Would that happen

- a) because he wasn't able to understand how to play, or
- b) because you couldn't explain it well? **I-A**

26. When you find it easy to work arithmetic or math problems at school, is it usually

- a) because the teacher gave you especially easy problems, or
- b) because you studied your book well before you tried them? **I+E**

27. When you remember something you heard in class, is it usually

- a) because you tried hard to remember, or **I+E**
- b) because your teacher explained it well?

28. If you can't work a puzzle, is it more likely to happen

- a) because you are not especially good at working puzzles, or **I-A**
- b) because the instructions weren't written clearly enough?

29. If your parents tell you that you are bright or clever, is it more likely

- a) because they are feeling good, or
- b) because of something you did? **I+**

30. Suppose you are explaining how to play a game to a friend and he learns quickly. Would that happen more often

- a) because you explained it well, or **I+A**
- b) because he was able to understand it?

31. Suppose you are not sure about the answer to a question your teacher asks you and the answer you give turns out to be wrong. Is it likely to happen

- a) because she was more particular than usual, or
- b) because you answered too quickly? **I-**

32. If a teacher says to you "Try to do better", would it be
- a) because this is something she might say to get pupils to try harder, or
 - b) because your work wasn't as good as usual? I-

Appendix 9 :

Revised items from Intellectual Achievement Responsibility Questionnaire (IAR).

Original Wording:

Back Translation from Greek:

- | | |
|---|---|
| 2. When you have trouble understanding something at school, it is usually, | 2. You find it difficult to understand something at school, |
| a) because the teacher didn't explain it clearly, or | a) because the teacher has not explained it properly, or |
| b) because you didn't listen carefully? | b) because you weren't listening carefully? |
|
 |
 |
| 4. Suppose your parents say you are doing well in school. Is this likely to happen | 4. One day your parents say: "You are doing well at school". Do you think that they say this |
| a) because your school work is good, or | a) because your school work is good, or |
| b) because they are in a good mood? | b) because they are in a good mood? |
|
 |
 |
| 5. Suppose you did better than usual in a subject at school. Would it probably happen | 5. You start doing better in a lesson. Is this happening |
| a) because you tried harder, or | a) because you tried harder, or |
| b) because someone helped you? | b) because somebody helped you? |
|
 |
 |
| 10. Suppose you study to become ... | 10. Imagine you study to become ... |
|
 |
 |
| 13. When you find it hard to work arithmetic or math problems at school, is it ... | 13. You find difficulty in solving the exercises or math problems at school, does this happen . |
|
 |
 |
| 14. When you forget something ... | 14. You forget something ... |
|
 |
 |
| 16. When you read a story and remember most of it, is it usually | 16. You read a story and you remember most of it, does this happen |
| a) because you were interested in the story, or | a) because you liked the story, or |
| b) because the story was well written? | b) because the story was well written? |

21. Suppose you don't do as well as usual in a subject at school. Would this probably happen
- a) because you weren't as careful as usual, or
b) because somebody bothered you and kept you from working?
21. One day you don't do as well as usual in a lesson at school. This might happen
- a) because you weren't as careful as usual, or
b) because somebody was bothering you during the lesson and didn't let you work properly?
24. Suppose you parents say you aren't doing well in your school work. Is this likely to happen more ...
24. One day your parents tell you that you are not doing well at school. Do you think they say it because ...
25. Suppose you are showing a friend how to play a game and he has trouble with it. Would that happen
- a) because he wasn't able to understand how to play, or
b) because you couldn't explain it well?
25. You show a friend how to play a game and s/he finds it difficult. Do you think this happens
- a) because s/he can't understand how to play, or
b) because you can't explain well enough the way to play it?
27. When you remember something you heard in class, is it usually
27. You heard something in class from the teacher and you do remember it. Do you think this is because....
29. If your parents tell you that you are bright or clever, is it more likely
- a) because they are feeling good, or
b) because of something you did?
29. One day you parents tell you that you are clever. Do you think they tell you that
- a) because they are in a good mood that day, or
b) because you did something clever?
30. Suppose you are explaining how to play a game to a friend and he learns quickly. Would that happen more often ...
30. You explain to a friend how to play a game and s/he learns it quickly. This happens

31. Suppose you are not sure about the answer to a question your teacher asks you and the answer you give turns out to be wrong. Is this likely to happen

a) because she was more particular than usual, or

b) because you answered too quickly?

31. One day you reply to your teacher's question without being sure about the answer, and your answer is wrong. Is this likely to happen

a) because the teacher's question was more specific than usual, or

b) because you were in a hurry to answer?

32. If a teacher says to you, "Try to do better", would it be

a) because this is something she might say to get pupils to try harder, or

b) because your work wasn't as good as usual?

32. If your teacher tells you "Try to do a better job", do you think s/he says it

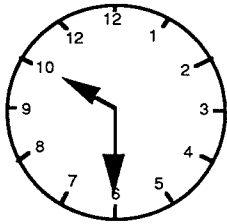
a) to urge children to try harder, or

b) because your work was not as good as usual?

Appendix 10:

The AL Maths Test 1 for Grade 3 (translated from Greek).

1. What time is it?



- a) Half past eleven.
- b) Half past ten.
- c) Ten to six.
- d) 6 o'clock.

2. Which number is missing ? $44 + ? = 84$

- a) 40
- b) 50
- c) 128
- d) 30

3. Which number is missing ? $50 + 25 + ? = 100$

- a) 20
- b) 50
- c) 25
- d) 75

4) Which number is in between 69 and 71 ?

- a) 68
- b) 72
- c) 70
- d) 67

5) Which number has 3 more tens than 60 ?

- a) 63
- b) 73
- b) 30
- d) 90

6) How many one hundred notes are 20 ten drahmas coins ?

- a) 1
- b) 2
- c) 10
- d) 5

7) Kostas has 93 stamps. He gave 15 to his sister. How many stamps does he have now ?

- a) 78
- b) 88
- c) 72
- d) none of these

8) How can you write the number which has 4 tens and 12 units ?

- a) 412
- b) 10
- c) 42
- d) 52

9) How many tens are there in 60 ?

- a) 6
- b) 10
- c) 16
- d) 60

10) Which is the largest number you can write with 1, 3 and 2?

- a) 213
- b) 231
- c) 132
- d) 321

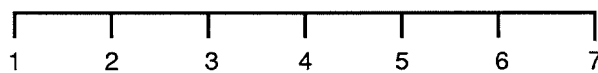
11) A chicken laid 68 eggs in summer and in winter 20 eggs less than summer. How many eggs did the chicken lay in winter ?

- a) 40
- b) 48
- c) 60
- d) 88

12) How many eights are there in 40 ?

- a) 5
- b) 6
- c) 8
- d) 4

13) Which fact is shown by the picture below ?



- a) $7 + 2 = 9$
- b) $3 + 4 = 7$
- c) $7 - 1 = 6$
- d) $7 - 2 = 5$

14) Mike had 77 chocolates and gave an equal number of them to his seven friends. How many did each one get ?

- a) 10
- b) 7
- c) 11
- d) 9

15) Complete the equation below:

$$(56 : 7) + (24 : 3) = ?$$

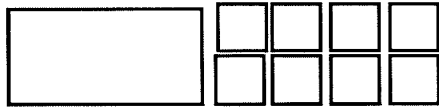
- a) 15
- b) 8
- c) 16
- d) 14

16) There were 3 people in front of George in the queue. What was George's position ?

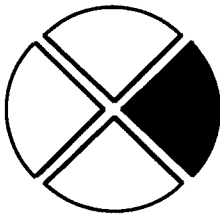
- a) first b) third
c) fourth d) second

17) We have cut the rectangle into equal parts. These parts are...

- a) circles b) rectangles
c) squares



18) Niko took one of the four equal parts. He got



- $\frac{1}{2}$
- $\frac{2}{4}$
- $\frac{1}{4}$
- $\frac{1}{3}$

19) One stamp costs 7 drachmas. How much do the 9 stamps cost ?

- [illegible]

20) How could you write $20 + 100 + 6$ as a three digit number ?

- a) 216 b) 621
c) 126 d) 261

Appendix 11:

The AL Maths Test II for Grade 4 (translated from Greek)

1) Complete the number which is missing from the following equation:

$$(3 \times 10) + ? = 34$$

- a) 30
- b) 5
- c) 3
- d) 4

2) Which number comes after: 55, 51, 47, ?

- a) 46
- b) 43
- c) 21
- d) 42

3) Helen has 1961 drachmas. How many drachmas. will be left over if she buys a dress at 1084 drachmas?

- a) 977
- b) 77
- c) 877
- d) 900

4) Mother bought 2 kilograms, 500 grammes of apples and oranges 200 grammes less than apples. What is the weight of oranges?

- a) 2 kilograms
- b) 2 kilograms 300 grammes
- c) 2 kilograms 200 grammes
- d) 1 kilograms 300 grammes

5) How many cm are 7m. and 6cm. ?

- a) 706cm.
- b) 760cm.
- c) 76cm.
- d) 12cm.

6) Which number is missing from the following equation?

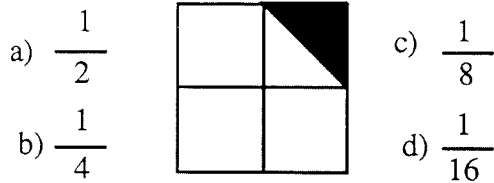
$$90 - 40 = 40 + ?$$

- a) 50
- b) 10
- c) 40
- d) 80

7) 0 in 703 stands for:

- a) 10 tens
- b) 0 hundreds
- c) 0 units
- d) 0 tens

8) Which fraction represents the shaded part of this shape?

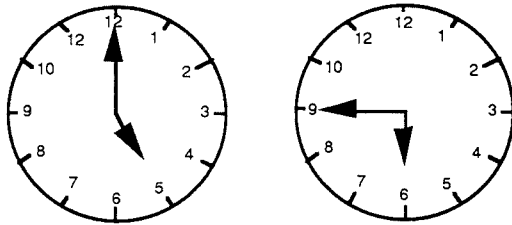


9) How many drachmas are two one-hundred drachmas notes, one 50-drachmas note, one 20 drachmas coin, two 10-drachmas coins and one 5-drachmas coin?

- a) 300 b) 280
 c) 275 d) 295

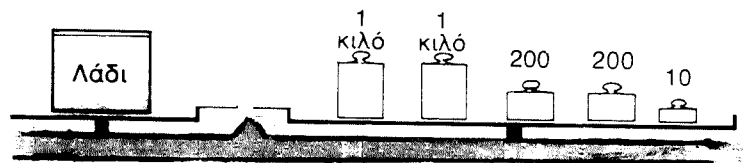
10) The two clocks show when Tasos started and finished his homework. How many minutes did it take him to finish?

- a) 9 b) 15
 c) 45 d) 75



11) What is the weight of the oil-container?

- a) 2 kilograms 410 grammes
 b) 412 kilograms
 c) 2 kilograms 210 grammes
 d) 2 kilograms 400 grammes



12) The school children were arranged in 65 groups of four and 78 groups of three. How many children there were altogether?

- a) 494 b) 143
 c) 260 d) 234

13) What part of 80 is 10?

a) $\frac{1}{10}$

b) $\frac{1}{2}$

c) $\frac{1}{8}$

14) The road from home to school is 150 m. long and from school to the stadium 530 m. 50 cm. What is the distance from home to the stadium?

a) 680 m.

b) 730 m.

c) 680 m. 50 cm.

15) I paid 55 drachmas to buy 3 pencils. The shopkeeper gave me 1 drh. change. How much does each pencil cost?

a) 10 drh.

b) 18 drh.

c) 15 drh.

d) 20 drh.

16) You have 72 roses and you divided them equally into 9 flower pots. How many roses did you put into each?

a) 9

b) 8

c) 7

d) 10

17) Which number is missing? $488 : 4 = ?$

a) 122

b) 222

c) 120

d) 12

18) Which of these represents an **odd** number?

a) 610

b) 912

c) 458

c) 879

19) What is the next multiple of 3 after 12?

a) 13

b) 15

c) 21

d) 30

20) Find the number which is 4 tens less than 91.

a) 83

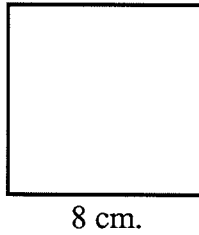
b) 40

c) 51

d) 50

21) What is the perimeter of this square?

- a) 32 cm.
- b) 64 cm.
- c) 24 cm.
- d) none of these



22) Which number has 6 hundreds, 13 tens and 4 units?

- a) 6134
- b) 634
- c) 613
- d) 734

23) Which number is missing from the equation? $256 : ? = 64$

- a) 4
- b) 2
- c) 6
- d) 128

24) Nikos paid 50 drh. for a chocolate. Vasilis paid 5 ten-drachmas coins for another. Who paid more money?

- a) Nikos
- b) Vasilis
- c) They both paid the same amount.

25) A passenger couldn't catch the 7.15 bus. The next one is at 9.30. How long does he have to wait?

- a) 2 hours
- b) 2 hours and 15 minutes
- c) 2 hours and 30 minutes
- d) 1 hour and 30 minutes

Appendix 12:

The AL Maths Test III for Grade 5 (translated from Greek).

- 1) What number is missing from the following equation? $349 + ? = 412$
a) 137
b) 63
c) 761
d) 100
- 2) Find the number which is smaller than 1901 by 2.
a) 1999
b) 1899
c) 1900
d) 1903
- 3) Which digit is missing? $17 ? \times 5 = 890$
a) 0
b) 6
c) 1
d) 8
- 4) Which number is missing? $7620 : ? = 762$
a) 76
b) 100
c) 10
d) 20
- 5) A container takes 175 kilograms of water. Another one 67.200 kg. less. How many kg can both of them take?
a) 107.800 kg
b) 242.200 kg
c) 282.800 kg
d) 847 kg
- 6) Which number is 100 greater than 2346 by ?
a) 2446
b) 3346
b) 2347
d) 2356
- 7) Which number **cannot** be **divided exactly** by 3 and 9 ?
a) 18
b) 63
c) 24
d) 171
- 8) Ilias and Maria planted 60 flowers. How many dozens did they plant ?
a) 4
b) 5
c) 8
d) 12

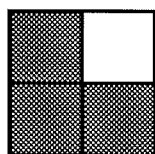
9) Classes at school start at 8.30 a.m. and finish at 1.00 p.m. Intervals last for 45 minutes. How long does work at school last ?

- a) 3 hours 35 minutes b) 4 hours 30 minutes
c) 3 hours 45 minutes d) 4 hours

10) How many drachmas are 5 one hundred-drachmas notes, 19 ten-drachmas coins and 15 drachmas ?

- a) 534 drh. b) 705 drh.
c) 350 drh. d) 519 drh.

11) Which addition is depicted in the picture below ?



a) $\frac{1}{4} + \frac{2}{3} = \frac{11}{12}$

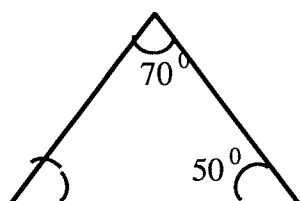
b) $\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$

c) $\frac{3}{4} + \frac{1}{2} = \frac{5}{4}$

d) $\frac{2}{3} + \frac{1}{2} = \frac{7}{6}$

12) How many degrees is the third angle of the triangle?

- a) 50 b) 70
c) 40 d) 60



13) What decimal number can you write for 4 (whole number) and 2 thousandths ?

- a) 4.2 b) 4.02
c) 4.002 d) 4.200

14) 196 children were grouped in groups of 4. How many groups did they form?

- a) 40 b) 49
c) 36 d) 50

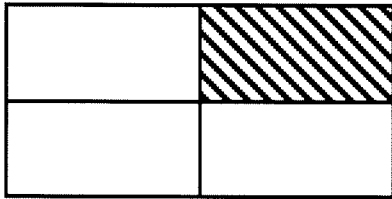
15) Find the number which represents the shaded part.

a) 0,25

b) 0,33

c) 0,4

d) 0,75



16) John got $\frac{1}{4}$ of the stones. Irini $\frac{3}{6}$ and Anna $\frac{2}{8}$. Which two children got equal number of stones?

a) John and Irini

b) Anna and Irini

c) John and Anna

17) Find the missing number from the following equation: $40 : 4 = ? - 35$

a) 10

b) 35

c) 45

d) 8

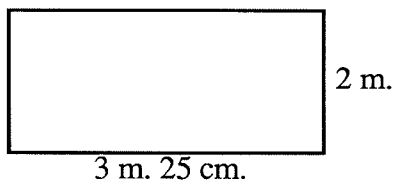
18) A rectangular garden is 3 m. 25 cm. long and 2 m. wide. What is its perimeter ?

a) 10 m.

b) 10 m. 50 cm.

c) 5 m. 50 cm.

d) 10 m. 25 cm.



19) Which of the following fractions is larger than 1 ?

a) $\frac{7}{7}$

c) $\frac{3}{4}$

b) $\frac{15}{8}$

d) $\frac{9}{10}$

Appendix 13:

The AL Maths Test IV for Grade 6 (translated from Greek).

1) If $820 - X = 542$, which number can replace X ?

- a) 280
- b) 1362
- c) 400
- d) 278

2) Which pair of numbers can be used in the following equation?

$$64 = (? \times 3) + ?$$

- a) 15 and 4
- b) 2 and 2
- c) 20 and 1
- c) 21 and 1

3) Which number is missing ? $120 \times ? = 600$

- a) 5
- b) 4
- c) 100
- d) none of these

4) How many minutes are $\frac{3}{10}$ of an hour ?

- a) 30
- b) 60
- c) 10
- d) 18

5) Paul weighs 10 kilograms more than Kosta. If Kostas weighs 50 kilograms, which equation can you use to find Paul's weight ?

- a) $X - 10 = 50$
- b) $10 \times X = 50$
- c) $X + 10 = 50$
- d) $X / 10 = 50$

6) Which of the following comparisons is **wrong** ?

a) $\frac{3}{4} > \frac{2}{4}$

c) $\frac{7}{12} < \frac{8}{12}$

b) $\frac{5}{8} = \frac{8}{5}$

d) $\frac{5}{7} < \frac{5}{8}$

7) There is a triangular traffic sign in front of the school. Its base is 50 cm and its height 60 cm. What is its surface area ?

- a) 3000 square cm
- b) 1500 square cm.
- c) 300 square cm.
- d) none of these

8) Which of the following fractions is equal to 3.25 ?

- a) $3\frac{25}{10}$ c) $\frac{325}{1000}$
b) $3\frac{1}{4}$ d) $3\frac{1}{2}$

9) Panos was putting in his money-box 25 drh. per week for 9 weeks. With the money that he collected he bought a torch and had 30 drh. left over. Which number sentence below can be used to find the cost of the torch ?

- a) $(9 \times 25) + 30 = X$ b) $(9 \times 30) - 25 = X$
c) $(9 \times 25) - 30 = X$ d) $30 - 25 = X$

10) Which number is missing ? $19 + (33 \times X/33) = 21$

- a) 0 b) 1
c) 2 d) 21

11) Kostas is ten years and 2 months old. John is $11\frac{1}{2}$ years old. What is the difference of age between the two ?

- a) 8 months b) 1 year exactly
c) 1 year and 2 months d) 1 year and 4 months

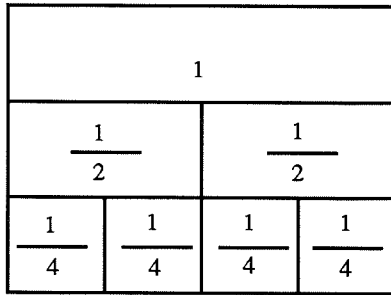
12) 3 kilograms and 400 grammes of oil is equally divided into 4 containers. How much oil is there in each container ?

- a) 1100 grammes b) 1 kilograms 200 grammes
c) 350 grammes d) 850 grammes

13) Which number can replace X ? $(6 \times X) - 50 = 100$

- a) 25 b) 50
c) 150

14) Which number sentence **cannot** be shown by the picture below ?



a) $1 = \frac{2}{2}$

c) $\frac{1}{2} = \frac{2}{4}$

b) $1 = \frac{4}{4}$

d) $\frac{2}{4} = \frac{4}{8}$

15) Which number is missing ?

$480 : ? = 4.8$

a) 10

b) 48

c) 1000

d) 100

16) Which number is larger than 0.761 ?

a) 0.8

b) 0.699

c) 0.7603

d) 0.716

17) Peter is 1.9 m. tall and John is 1.82 m. tall. How much taller is Peter ?

a) 8 cm.

b) 80 cm.

c) 9 cm.

d) 18 cm.

18) The fraction $\frac{8}{100}$ could also be written as:

a) 0.8

b) 0.08

c) 8.0

d) 0.800

19) Maria is 32 cm. shorter than Niko. Niko is 21 cm. taller than Peter. Which of the following sentences is **right** ?

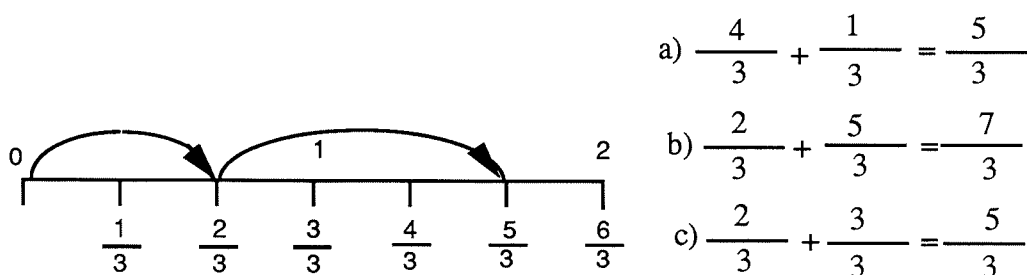
a) Maria is 11 cm. taller than Peter.

b) Maria is 11 cm. shorter than Peter.

c) Maria is 53 cm. shorter than Peter.

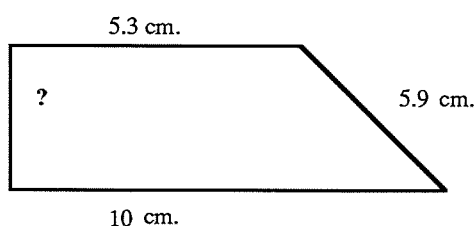
d) Maria is 9 cm. taller than Peter.

20) Which addition can be explained by the picture below ?



21). The trapezoid has a perimeter of 25.7 cm. How many cm. long is its fourth side ?

- a) 13.6 cm. b) 5.9 cm.
c) 4.5 cm. d) none of these

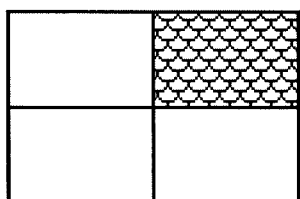


22) Kostas bought 3 kilograms of oranges. He also bought lemons and paid 36 drh. for the lemons. He paid a total of 222 drh. How much did he pay for one kilograms of oranges ?

- a) 74 drh. b) 62 drh.
c) 186 drh.

23) Which number represents the shaded part of this figure ?

- a) 0.25 b) 0.33
c) 0.4 d) 0.75



- 24) Which fraction is missing ? $? + 7/12 = 1$
a) $7/12$ b) $5/12$
c) $12/12$

- 25) Maria ran with her bike 2.75 km and 750 m. Dimitris ran 2000 m. and 1.2 km.
Who ran the most ?
a) Maria b) Dimitris
c) They both ran the same.

Appendix 14

Pearson's Product Moment Correlation Coefficients for the whole sample (N = 424).

	Sex	Grade	SES	ACV	ACM	IAR	I+	I-	I+A	I-A	I+E	I-E	PCE	PCA	PCG	SDQM	SDQR
Sex	1.00																
Grade	-.08	1.00															
SES	-.05	.01	1.00														
ACV	.05	-.01	.24**	1.00													
ACM	-.05	-.02	.24**	.83**	1.00												
IAR	-.02	.35**	.09	.31**	.32**	1.00											
I+	.06	.21**	.12	.30**	.32**	.71**	1.00										
I-	-.07	.30**	.03	.16*	.16*	.75**	.09	1.00									
I+A	.07	.12	.02	.15*	.17**	.52**	.81**	-.00	1.00								
I-A	-.11	.11	-.04	-.04	-.03	.45**	.03	.60**	.00	1.00							
I+E	.03	.17**	.12	.29**	.31**	.60**	.79**	.12	.45**	.04	1.00						
I-E	-.10	.24**	.07	.21**	.22**	.66**	.09	.83**	.02	.25**	.12	1.00					
PCS	-.06	.11	.09	.34**	.36**	.24**	.39**	-.02	.29**	-.06	.36**	-.01	1.00				
PCA	-.01	-.03	.09	.25**	.30**	.13*	.27**	-.07	.24**	-.04	.19**	-.04	.35**	1.00			
PCG	-.01	.05	.03	.14*	.12	.10	.19**	-.02	.16*	.00	.12	-.04	.31**	.36**	1.00		
SDQM	-.12	-.09	.13*	.26**	.36**	.12	.23**	-.05	.13*	-.05	.24**	.00	.36**	.34**	.20**	1.00	
SDQR	.09	-.05	.08	.31**	.23**	.13	.34**	-.12	.24**	-.15*	.29**	-.09	.32**	.42**	.28**	.33**	1.00

Appendix 15:

Pearson's Product Moment Correlations for the Regular Class (n = 352).

	Sex	Grade	SES	ACV	ACM	IAR	I+	I-	I+A	I-A	I+E	I-e	PCE	PCA	PCG	SDQM	SDQR
Sex	1.00																
Grade	-.07	1.00															
SES	-.05	.01	1.00														
ACV	.04	-.03	.27**	1.00													
ACM	-.07	-.01	.25**	.81**	1.00												
IAR	-.06	.39**	.03	.15*	.20**	1.00											
I+	.05	.26**	.08	.22**	.24**	.67**	1.00										
I-	-.11	.31**	-.00	.04	.08	.77**	.07	1.00									
I+A	.05	.14*	-.03	.05	.09	.49**	.80	-.01	1.00								
I-A	-.17*	.12	-.03	-.10	-.09	.47**	.04	.60**	.04	1.00							
I+E	.02	.21**	.07	.22**	.23**	.54**	.76**	.10	.41**	.03	1.00						
I-e	-.12	.26**	.02	.10	.15*	.66**	.06	.83**	-.02	.24**	.10	1.00					
PCE	-.06	.15	.06	.29*	.30**	.18*	.33**	-.04	.24**	-.04	.32**	-.05	1.00				
PCA	.00	.00	.08	.24**	.28**	.11	.24**	-.06	.22**	-.03	.14	-.05	.36**	1.00			
PCG	.01	.04	.05	.12	.08	.06	.14*	-.03	.08	.03	.09	-.08	.28**	.34**	1.00		
SDQM	-.14*	-.08	.10	.20**	.33**	.04	.15*	-.07	.07	-.06	.15	-.02	.30**	.29**	.15*	1.00	
SDQR	.10	-.04	.04	.26**	.17*	.02	.26**	-.18**	.21**	-.18**	.19**	-.15*	.29**	.42**	.26**	.21**	1.00

Appendix 16:

Pearson's Product Moment Correlation Coefficients for the NA group (N = 273).

	Sex	Grade	SES	ACV	ACM	IAR	I+	I-	I+A	I-A	I+E	I-E	PCE	PCA	PCG	SDQM	SDQR
Sex	1.00																
Grade	-.07	1.00															
SES	-.03	-.01	1.00														
ACV	.12	.04	.25**	1.00													
ACM	-.05	.05	.23**	.68**	1.00												
IAR	-.06	.40**	-.00	.09	.10	1.00											
I+	.02	.23**	.05	.16*	.19*	.66**	1.00										
I-	-.09	.35**	-.04	-.00	-.02	.81**	.09	1.00									
I+A	.02	.08	-.05	-.01	.05	.46**	.76**	.00	1.00								
I-A	-.17*	.16*	.01	-.04	-.04	.53**	.07	.65**	.05	1.00							
I+E	.03	.17*	.04	.14	.12	.52**	.73**	.11	.33*	.09	1.00						
I-E	-.09	.29**	.01	.02	.04	.69**	.10	.84**	.01	.29**	.10	1.00					
PCE	-.02	.12	.02	.30**	.30**	.18*	.29**	.01	.20**	.04	.26**	-.03	1.00				
PCA	-.02	.04	.00	.19*	.22**	.08	.23**	-.07	.23**	.00	.10	-.08	.36**	1.00			
PCG	.02	.03	.02	.08	.08	.09	.15	-.00	.09	.03	.09	-.04	.28**	.35**	1.00		
SDQM	-.15	-.06	.08	.15	.26	.02	.14	-.08	.06	-.04	.11	-.05	.22**	.23**	.13	1.00	
SDQR	.10	-.09	-.02	.11	.05	.03	.22*	-.14	.21**	-.06	.13	-.16	.25**	.42**	.25**	.18*	1.00

Appendix 17:

Pearson's Product Moment Correlation Coefficients for the LA group (N = 79).

	Sex	Grade	SES	ACV	ACM	IAR	I+	I-	I+A	I-A	I+E	I-E	PCE	PCA	PCG	SDQM	SDQR
Sex	1.00																
Grade	-.07	1.00															
SES	-.09	.12	1.00														
ACV	-.02	.11	.10	1.00													
ACM	-.17	.17	.05	.00	1.00												
IAR	-.05	.46**	.05	.03	.30*	1.00											
I+	.14	.42**	.05	.18	.21	.69**	1.00										
I-	-.17	.23	.08	-.12	.20	.66**	-.03	1.00									
I+A	.17	.35**	.01	.20	.14	.59**	.89**	-.07	1.00								
I-A	-.16	-.07	-.08	-.08	.09	.38**	.00	.50**	.10	1.00							
I+E	.02	.37*	.06	.12	.26	.54**	.79**	.02	.61**	-.07	1.00						
I-E	-.18	.21	-.01	-.09	.22	.55**	-.10	.80**	-.13	.14	-.00	1.00					
PCE	-.16	.31*	.13	.21	.29	.10	.38**	-.24	.32*	-.25	.44**	-.20	1.00				
PCA	.10	-.04	.23	-.01	.15	.08	.20	-.11	.17	-.03	.12	-.08	.27	1.00			
PCG	-.03	.09	.09	.10	-.16	-.08	.07	-.14	.03	.06	.03	-.24	.24	.28	1.00		
SDQM	-.09	-.08	.06	-.18	.29	-.01	.08	-.11	.08	-.03	.14	-.05	.43**	.33**	.14	1.00	
SDQR	.15	.14	.08	.32*	-.06	-.08	.27	-.37	.21	-.43**	.23**	-.22	.31*	.36**	.25	.16	1.00

Appendix 18:

Pearson's Product Moment Correlation Coefficients for SC group (N = 72).

	Sex	Grade	SES	ACV	ACM	IAR	I+	I-	I+A	I-A	I+E	I-E	PCE	PCA	PCG	SDQM	SDQR
Sex	1.00																
Grade	-.10	1.00															
SES	-.09	.01	1.00														
ACV	-.11	.12	-.04	1.00													
ACM	-.24	-.12	.05	.36*	1.00												
IAR	.07	.29	.18	.24	.06	1.00											
I+	.06	.09	.17	-.02	.06	.70**	1.00										
I-	.06	.28	.06	.35*	.03	.63**	-.10	1.00									
I+A	.07	.05	.08	-.03	-.05	.47**	.79**	-.18	1.00								
I-A	.13	.07	-.13	.25	.17	.42**	-.04	.66**	-.15	1.00							
I+E	-.01	.09	.18	.01	.16	.63**	.81**	-.01	.44**	.04	1.00						
I-E	-.08	.20	.14	.31*	.01	.52**	-.08	.82**	-.07	.28	-.03	1.00					
PCE	-.14	-.09	.11	.07	.22	.16	.38*	-.19	.32*	-.18	.31*	-.09	1.00				
PCA	-.14	-.18	.04	-.15	.13	-.05	.22	-.28	.17	-.11	.23	-.18	.19	1.00			
PCG	-.12	.13	-.07	.00	.06	.10	.24	-.11	.33*	-.13	.11	-.01	.39**	.39**	1.00		
SDQM	-.09	-.18	.19	.06	.18	.10	.31*	-.19	.15	-.07	.33*	-.15	.45**	.46**	.37*	1.00	
SDQR	-.00	-.07	.14	.29	.14	.25	.42**	-.10	.19	-.06	.41**	-.12	.33*	.35*	.30	.66**	1.00

1. Μερικά παιδιά νομίζουν πως τα καταφέρνουν στην σχολική τους δουλειά.	εω	Άλλα παιδιά ανησυχούν για το αν είναι ικανά να κάνουν τη σχολική τους δουλειά.	εω	Άλλα παιδιά θα ήθελαν να μείνουν αλλάξαν αρκετά πράγματα στον εαυτό τους αν μπορούσαν.	εω	Άλλα παιδιά δεν είναι σίγουρα και αναρωτιούνται αν είναι τόσο έξυπνα.	εω	Άλλα παιδιά δεν είναι σίγουρα για τον εαυτό τους.	εω	Άλλα παιδιά μπορούν να κάνουν τη σχολική τους δουλειά γρήγορα	εω	Άλλα παιδιά θα προτιμούσαν να φέρονταν διαφορετικά.	εω	Άλλα παιδιά θυμούνται εύκολα αυτά που μαθαίνουν.	εω	Άλλα παιδιά είναι σίγουρα ότι είναι πολύ καλοί άνθρωποι.	εω	Ξε άλλα παιδιά δεν αρέσει το σχολείο γιατί είναι καλοί μαθητές.	εω	Άλλα παιδιά θα ήθελαν να είναι διαφορετικά.	εω	Άλλα παιδιά καταβαλίνουν αμέσως αυτά που διαβάζουν.	εω	Άλλα παιδιά πιστεύουν ότι ο τρόπος που κάνουν κάποια πράγματα είναι ο σωστός.	εω	Άλλα παιδιά βρίσκουν τις απαιτήσεις πολύ εύκολα.	εω	Άλλα παιδιά δεν είναι τόσο σίγουρα ότι αυτό που κάνουν είναι το σωστό.	εω	14. Μερικά παιδιά είναι συνήθως σίγουρα ότι αυτό που κάνουν είναι το σωστό.	εω	14. Μερικά παιδιά είναι συνήθως σίγουρα ότι αυτό που κάνουν είναι το σωστό.	εω	13. Μερικά παιδιά δυσκολεύονται να βρίσκουν τις σωστές απαιτήσεις στο σχολείο.	εω	13. Μερικά παιδιά δυσκολεύονται να βρίσκουν τις σωστές απαιτήσεις στο σχολείο.	εω	12. Μερικά παιδιά δεν είναι ευχαριστημένα από τον τρόπο που κάνουν κάποια πράγματα.	εω	12. Μερικά παιδιά δεν είναι ευχαριστημένα από τον τρόπο που κάνουν κάποια πράγματα.	εω	11. Μερικά παιδιά θα ήθελαν να μπορούσαν να καταβαλίνουν πιο εύκολα αυτά που διαβάζουν.	εω	11. Μερικά παιδιά θα ήθελαν να μπορούσαν να καταβαλίνουν πιο εύκολα αυτά που διαβάζουν.	εω	10. Μερικά παιδιά είναι πολύ ευχαριστημένα από τον εαυτό τους.	εω	10. Μερικά παιδιά θα ήθελαν να είναι διαφορετικά.	εω	9. Ξε μερικά παιδιά αρέσει το σχολείο γιατί είναι καλοί μαθητές.	εω	9. Ξε μερικά παιδιά αρέσει το σχολείο γιατί είναι καλοί μαθητές.	εω	8. Μερικά παιδιά νομίζουν ότι ίσως δεν είναι τόσο καλοί άνθρωποι.	εω	8. Μερικά παιδιά νομίζουν ότι ίσως δεν είναι τόσο καλοί άνθρωποι.	εω	7. Μερικά παιδιά συχνά ξεχνούν όσα μαθαίνουν.	εω	7. Μερικά παιδιά συχνά ξεχνούν όσα μαθαίνουν.	εω	6. Μερικά παιδιά είναι ευχαριστημένα από τον τρόπο που φέρονται.	εω	6. Μερικά παιδιά είναι ευχαριστημένα από τον τρόπο που φέρονται.	εω	5. Μερικά παιδιά αργούν να τελειώσουν την σχολική τους δουλειά.	εω	5. Μερικά παιδιά μπορούν να κάνουν τη σχολική τους δουλειά γρήγορα	εω	4. Μερικά παιδιά είναι πολύ σίγουρα για τον εαυτό τους.	εω	4. Μερικά παιδιά είναι πολύ σίγουρα για τον εαυτό τους.	εω	3. Μερικά παιδιά νομίζουν ότι είναι τόσο έξυπνα όσο και τα άλλα παιδιά της ηλικίας τους.	εω	3. Μερικά παιδιά νομίζουν ότι είναι τόσο έξυπνα όσο και τα άλλα παιδιά της ηλικίας τους.	εω	2. Μερικά παιδιά σκέφτονται πως θ' αλλάξαν αρκετά πράγματα στον εαυτό τους αν μπορούσαν.	εω	2. Μερικά παιδιά σκέφτονται πως θ' αλλάξαν αρκετά πράγματα στον εαυτό τους αν μπορούσαν.	εω	1. Μερικά παιδιά νομίζουν πως τα καταφέρνουν στην σχολική τους δουλειά.	εω	1. Μερικά παιδιά νομίζουν πως τα καταφέρνουν στην σχολική τους δουλειά.	εω
---	----	--	----	--	----	---	----	---	----	---	----	---	----	--	----	--	----	---	----	---	----	---	----	---	----	--	----	--	----	---	----	---	----	--	----	--	----	---	----	---	----	---	----	---	----	--	----	---	----	--	----	--	----	---	----	---	----	---	----	---	----	--	----	--	----	---	----	--	----	---	----	---	----	--	----	--	----	--	----	--	----	---	----	---	----

Self Description Questionnaire (SPQ1)

APPENDIX 20: SDQ

Αυτή είναι μια ευκαιρία να κοιτάξεις τον εαυτό σου. Δεν είναι τέστ. Δεν υπάρχουν σωστές και λάθος απαντήσεις. Ο καθένας από σας θα έχει μια διαφορετική απάντηση. Βεβαιώσου ότι οι απαντήσεις σου δείχνουν αυτό ακριβώς που αισθάνεσαι. ΠΑΡΑΚΑΛΩ ΜΗ ΣΥΖΗΤΑΣ ΤΙΣ ΑΠΑΝΤΗΣΕΙΣ ΣΟΥ ΜΕ ΤΟΥΣ ΑΛΛΟΥΣ. Μη δείχνεις τις απαντήσεις σου σε κανένα άλλο.

Τώρα που είσαι έτοιμος/έτοιμη να απαντήσεις, άκουξε με προσεκτικά καθώς θα διαβάζω τις προτάσεις και αποφάσισε ποια θα είναι η απάντησή σου (μπορείς ακόμα να διαβάζεις σιωπηλά μόνοι/μόνη σου όσο εγώ θα διαβάζω δυνατά).

Υπάρχουν πέντε πιθανές απαντήσεις σε κάθε ερώτηση, 'Εντελώς Σωστό', 'Εντελώς Λάθος' και τρεις ενδιάμεσες απαντήσεις. Υπάρχουν πέντε γραμμές πάνω σε κάθε πρόταση, μια για κάθε απάντηση. Οι απαντήσεις είναι γραμμένες στην κορυφή της σελίδας. Διαλέξε την απάντηση σου για κάθε πρόταση και βάλε ένα Χ στην γραμμή που αντιστοιχεί στην απάντηση που διάλεξες. Μην λές την απάντηση σου δυνατά και μην τη συζητάς με άλλα παιδιά.

Πριν απαντήσεις δοκίμασε τα παραδείγματα που υπάρχουν εδώ. Κάποιες απαντήσεις στις δύο προτάσεις για να σου δείξει τον τρόπο. Στην πρώτη πρόταση διάλεξε τη δική σου απάντηση και βάλε το Χ.

ΠΑΡΑΔΕΙΓΜΑΤΑ:

Εντελώς	Συνήθως	Λάθος	Κάποτε	Συνήθως	Εντελώς
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

1) Μου αρέσει να διαβάζω κόμικς

2) Ένικά είμαι τακτικός/τακική

3) Μου αρέσει να βλέπω τηλεόραση

_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Διάλεξε μόνο ΜΙΑ ΑΠΑΝΤΗΣΗ για κάθε πρόταση. Μην αφήνεις απάντητες προτάσεις. Τώρα γύρισε τη σελίδα και άρχισε. Όταν αρχίσεις σε παρακαλώ να ΜΗ ΜΙΛΑΣ.

Εντελώς	Συνήθως	Λάθος	Κάποτε	Συνήθως	Εντελώς
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

1. Πάρνω καλούς βαθμούς στην "γλώσσα".

2. Οι γονείς μου με καταβάλουν.

3. Έχω πολλούς φίλους/φίλες.

4. Μου αρέσει το γάλασσικό μπάμπα.

5. Η δουλειά στα μαθηματικά είναι εύκολη για μένα.

6.Κάνω φίλους εύκολα.	-----	-----	-----	-----	-----
7.Είμαι καλός/καλή στην “γλώσσα”.	-----	-----	-----	-----	-----
8.Μού αρέσουν οι γονείς μου.	-----	-----	-----	-----	-----
9.Περιμένω μ’ευχαρίστηση το μάθημα των μαθηματικών.	-----	-----	-----	-----	-----
10.Μ’ενδιαφέρει το “γλωσσικό μάθημα”.	-----	-----	-----	-----	-----
11.Αρέσω στους γονείς μου.	-----	-----	-----	-----	-----
12.Παίρνω καλούς βαθμούς στα μαθηματικά.	-----	-----	-----	-----	-----
13.Τα πάω εύκολα καλά με τ’άλλα παιδιά.	-----	-----	-----	-----	-----
14.Αν είχα δικά μου παιδιά θα ήθελα να τα μεγαλώσω όπως με μεγάλωσαν οι γονείς μου.	-----	-----	-----	-----	-----
15.Μ’ ενδιαφέρουν τα μαθηματικά .	-----	-----	-----	-----	-----
16.Συνήθως αρέσω στους άλλους.	-----	-----	-----	-----	-----
17.Μου αρέσει να κάνω δουλειά στη “γλώσσα”.	-----	-----	-----	-----	-----
18.Οι γονείς μου κι εγώ περνούμε πολλές ώρες μαζί.	-----	-----	-----	-----	-----
19.Μαθαίνω γρήγορα τα μαθηματικά.	-----	-----	-----	-----	-----
20.Τα άλλα παιδιά με θέλουν για φίλο/ φίλη τους.	-----	-----	-----	-----	-----
21.Η δουλειά στην “γλώσσα” είναι εύκολη για μένα.	-----	-----	-----	-----	-----
22.Οι γονείς μ’ ακούνε πρόθυμα όταν τους μιλώ.	-----	-----	-----	-----	-----
23.Μου αρέσουν τα μαθηματικά.	-----	-----	-----	-----	-----
24.Έχω πιο πολλούς φίλους απ’ ότι τα περισσότερα παιδιά.	-----	-----	-----	-----	-----
25.Περιμένω μ’ ευχαρίστηση το γλωσσικό μάθημα.	-----	-----	-----	-----	-----
26.Τα πάω καλά με τους γονείς μου.	-----	-----	-----	-----	-----
27.Είμαι καλός/καλή στα μαθηματικά.	-----	-----	-----	-----	-----

28.Τα παιδιά της ηλικίας μου με
συμπαθούν.

29.Οι γονείς μου κι εγώ διασκεδά-
ζουμε πολύ μαζί.

30.Μου αρέσει να κάνω δουλειά
στα μαθηματικά.

31.Αρέσω στα περισσότερα παιδιά.

32.Μαθαίνω γρήγορα την “γλώσσα”.

APPENDIX 21: IAR

Εδώ υπάρχουν μερικές προτάσεις που αναφέρονται σε διάφορα πράγματα που συμβαίνουν σε παιδιά της ηλικίας σου. Θα ήθελα να ξέρω τι σκέφτεσαι γι αυτά. Αυτό δεν είναι test. Ετοιμάω δεν υπάρχουν σωστές και λάθος απαντήσεις. Οι άνθρωποι διαφέρουν μεταξύ τους, άρα ο καθένας/καθεμία θα δώσει τη δική της απάντηση.

Θα διαβάσω εγώ κάθε πρόταση. Άκουσε προσεκτικά και αποφάσισε ποιά απάντηση σου ταυριάζει. Υπάρχουν δύο απαντήσεις για κάθε πρόταση, α ή β. Βάλε ένα κύκλο γύρω από το α ή β. ΠΡΟΣΕΞΕ, ΝΑ ΔΙΑΒΑΣΕΙΣ ΜΟΝΟ ΜΙΑ ΑΠΑΝΤΗΣΗ.

1. Γράφεις καλά σ' ένα διαγώνισμα στο σχολείο.
 α) όταν έχεις μελέτησει, ή
 β) όταν το διαγώνισμα είναι πολύ εύκολο.
2. Δυσκολεύεσαι να καταλάβεις κάτι στο σχολείο.
 α) γιατί η δασκάλα/ο δασκάλος δεν το εξήγησε καλά, ή
 β) γιατί δεν άκουγες προσεκτικά.
3. Όταν διαβάζεις για ιστορία και δεν θυμάσαι πολλά απ' αυτή, αυτό γίνεται
 α) γιατί η ιστορία δεν ήταν καλά γραμμένη, ή
 β) γιατί δεν ενδιαφερόσουν γι' αυτή.
4. Κάποια μέρα οι γονείς σου σου λένε: "Πας καλά στο σχολείο!". Νομίζεις ότι
 α) επειδή η σχολική σου δουλειά είναι καλή, ή
 β) επειδή αυτοί είναι σε καλή διάθεση.
5. Όταν αρχίζεις να τηγανίζεις καλύτερα σ' ένα μύδι, αυτό συμβαίνει
 α) επειδή προσπαθώ να προσοδέσω, ή
 β) επειδή κάποιος σε βοηθάει.
6. Όταν χάνεις σ' ένα επιτραπέζιο παιχνίδι αυτό συμβαίνει
 α) γιατί ο άλλος παίζει είναι καλύτερος στο παιχνίδι, ή
 β) γιατί σου δεν παίζεις καλά.
7. Αν κάποιος έχει τη γνώμη πως δεν είναι πολύ έξυπνος/έξυπνη, νομίζεις ότι
 α) μπορεί να τον κάνει ν' αλλάξει γνώμη αν προσπαθήσεις, ή νομίζεις ότι
 β) υπάρχουν μερικοί άνθρωποι που πιστεύουν πως δεν είναι πολύ έξυπνος/έξυπνη
 άσχετα με το τι κάνεις εσύ.
8. Αν φτιάξεις ένα παζλ γρήγορα, αυτό γίνεται
 α) επειδή το παζλ δεν ήταν πολύ δύσκολο, ή
 β) επειδή δουλέψες προσεκτικά πάνω σ' αυτό.
9. Αν κάποιο αγοράκι ή κορίτσι σου πει ότι είναι κουτό/κουτή, αυτό συμβαίνει
 α) γιατί είναι θυμωμένοι μαζί σου, ή
 β) γιατί αυτό που έκανες δεν ήταν πολύ έξυπνο.

10. Φαντάσου πως σπουδάζεις για να γίνεις δασκάλος/δασκάλα, επιστήμονας ή γιατρός και δεν τα καταφέρνεις. Νομίζεις ότι αυτό μπορεί να συμβεί
- α) επειδή δεν δουλέψεις αρκετά σκληρά, ή
β) επειδή κανένας δεν σου έδωσε τη βοήθεια που χρειαζόσουν ;
11. Όταν μαθαίνεις κάτι γρήγορα στο σχολείο αυτό γίνεται συνήθως
- α) επειδή προσέχεις πολύ, ή
β) επειδή η δασκάλα το εξηγεί πολύ καλά ;
12. Όταν η δασκάλα σου λέει " η δουλειά σου είναι καλή", αυτό είναι
- α) κάτι που λένε οι δασκάλους/οι δασκάλοι για να ενθαρρύνουν τα παιδιά, ή
β) γιατί έκανε καλή δουλειά ;
13. Δυσκολεύεσαι να λύσεις τις ασκήσεις ή τα προβλήματα των μαθημάτων στο σχολείο. Αυτό συμβαίνει
- α) επειδή δεν έχεις αρκετά πριν δοκιμάσεις να τα λύσεις, ή
β) επειδή η δασκάλα έδωσε πολύ δύσκολα προβλήματα ;
14. Ξέρεις κάτι που άκουσες στην τάξη
- α) επειδή η δασκάλα/ο δασκάλος δεν το εξηγεί πολύ καλά, ή
β) επειδή δεν προσπαθήσες αρκετά να το θυμάσαι ;
15. Υπόθεσε πως κάποια μέρα δεν ήσουν σίγουρος/σίγουρη για την απάντηση που έδωσες σε μια ερώτηση της δασκάλας/ του δασκάλου σου, αλλά η απάντησή σου ήταν σωστή. Αυτό μπορεί να έγινε
- α) γιατί η ερώτησή της δασκάλας/ του δασκάλου δεν ήταν πολύ καθαρή, ή
β) γιατί σου έδωσε την καλότερη απάντηση που μπορούσες ;
16. Διαβάζεις μια ιστορία και μετά θυμάσαι το μεγαλύτερο μέρος της, αυτό συμβαίνει συνήθως
- α) επειδή σου άρεσε η ιστορία, ή
β) επειδή ήταν καλά γραμμένη ;
17. Μερικές φορές οι γονείς σου σου λένε ότι φέρεσαι ανόητα και ότι δεν σκέφτεσαι σωστά, αυτό νομίζεις πως συμβαίνει
- α) επειδή σου έκανε κατι, ή
β) επειδή αυτοί είναι σε κακή διάθεση ;
18. Σε κάποιο διαγωνισμό στο σχολείο δεν τα καταφέρνεις. Νομίζεις ότι αυτό συμβαίνει.
- α) γιατί το διαγώνισμα ήταν πολύ δύσκολο, ή
β) γιατί δεν είχες διαβάσει ;
19. Κερδίζεις σ'ένα επιτραπέζιο παιχνίδι.
- α) επειδή παίζεις πολύ καλά, ή
β) επειδή ο άλλος παίκτης δεν παίζει καλά ;
20. Αν οι άλλοι σε θεωρούν έξυπνο, είναι
- α) επειδή σε συμπροούν, ή
β) επειδή συνήθως φέρεσαι έξυπνα ;
21. Κάποια μέρα δεν τα καταφέρνεις τόσο καλά, όσο συνήθως, σ' ένα μάθημα στο σχολείο. Αυτό μπορεί να συμβεί
- α) γιατί δεν ήσουν τόσο προσεκτικός/προσεκτική όσο τις άλλες φορές, ή
β) γιατί κάποιος σ' ενοχλούσε την ώρα του μαθήματος και σ'εμπόδιζε να δουλέψεις ;
22. Αν κάποιο παιδί σου πει ότι είσαι έξυπνος/ έξυπνη, αυτό γίνεται
- α) επειδή είχες μια καλή ιδέα, ή
β) επειδή σε συμπροεί ;

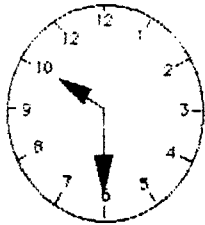
23. Φαντάσου ότι έγινες ένας διδασκός/δασκάλα, επιστήμονας ή γιατρός. Νομίζεις ότι αυτό μπορεί να συμβεί
- (α) γιατί οι άλλοι σε βοηθήσαν όταν το χρειάζοσουν, ή
- (β) γιατί σου δούλεψες πολύ σκληρά ;
24. Οι γονείς σου κάποια μέρα σου λένε πως δεν τα πας καλά στο σχολείο. Νομίζεις ότι το λένε
- (α) επειδή η σχολική σου δουλειά δεν είναι πολύ καλή, ή
- (β) επειδή αυτοί είναι σε κακή διάθεση ;
25. Δείχνεις σ'ένα φίλο ή μια φίλη σου πως να παίζει ένα παιχνίδι αλλά δυσκολεύεται. Νομίζεις ότι αυτό συμβαίνει
- (α) Επειδή δεν μπορούσε να καταλάβει πως να το παίζει, ή
- (β) επειδή σου δεν μπορούσε να εξηγήσει καλά τον τρόπο που παίζεται ;
26. Όταν λύνεις τις ασκήσεις ή τα προβλήματα των μαθημάτων εύκολα στο σχολείο, αυτό συμβαίνει
- (α) επειδή η δασκάλα σου έδωσε πολύ εύκολα προβλήματα, ή
- (β) επειδή μελέτησες καλά το βιβλίο σου πριν δοκιμάσεις να τα λύσεις ;
27. Άκουσες κάτι στην τάξη από τη δασκάλα/το δασκάλο και δεν το έχυδς. Νομίζεις ότι αυτό γίνεται
- (α) επειδή προσπαθούσε να το θυμάσαι, ή
- (β) επειδή η δασκάλα/ο δασκάλος το εξήγησε καλά ;
28. Αν δεν μπορείς να φτιάξεις ένα παζλ, αυτό μπορεί να συμβαίνει
- (α) επειδή δεν τα καταφέρνεις ιδιαίτερα καλά στο να φτιάχνεις παζλ, ή
- (β) επειδή οι οδηγίες δεν ήταν γραμμένες αρκετά καθαρά ;
29. Οι γονείς σου κάποια μέρα σου λένε ότι είσαι έξυπνος. Νομίζεις ότι το λένε
- (α) επειδή αυτοί είναι εκείνη τη μέρα σε καλή διάθεση, ή
- (β) επειδή σου έκανες κάτι εξυπνο ;
30. Εξηγείς σ'ένα φίλο ή μια φίλη σου πως να παίζει ένα παιχνίδι και το μαθαίνει γρήγορα. Αυτό συμβαίνει
- (α) Επειδή το εξήγησες καλά, ή
- (β) Επειδή ήταν ικανός/ικανή να το καταλάβει ;
31. Μια μέρα απαντάς στην ερώτηση της δασκάλας/του δασκάλου σου χωρίς να είσαι σίγουρος/σίγουρη και η απάντηση που δίνεις είναι λάθος. Έδωσες λάθος απάντηση
- (α) γιατί η ερώτηση της δασκάλας/του δασκάλου ήταν πιο συγκεχυμένη απ'ότι συνηθώς, ή
- (β) γιατί βιάστηκες να απαντήσεις ;
32. Αν η δασκάλα/ο δασκάλος σου πει "προσπάθησε να κάνεις καλύτερη δουλειά", νομίζεις ότι αυτό το λένε
- (α) για να παρακινήσει τα παιδιά να προσπαθήσουν περισσότερο, ή
- (β) γιατί η δική σου δουλειά δεν ήταν τόσο καλή όσο συνηθώς ;

APPENDIX 22:

The AL Maths Test 1 for Grade 3

1. Τι ώρα είναι;

- α) 11 και μισή β) 10 και μισή γ) 6 παρά δέκα δ) 6 ακριβώς



2. Ποιος αριθμός λείπει ; $44 + ; = 84$

- α) 40 β) 50 γ) 128 δ) 30

3. Ποιός αριθμός λείπει ; $50 + 25 + ; = 100$

- α) 20 β) 50 γ) 25 δ) 75

4. Ποιός αριθμός είναι ανάμεσα στο 69 και το 71;

- α) 68 β) 72 γ) 70 δ) 67

5. Ποιός αριθμός έχει 3 δεκάδες περισσότερες από το 60;

- α) 63 β) 73 γ) 30 δ) 90

6. Πόσα κατοστάρικα κάνουν τα 20 δεκάρικα;

- α) 1 β) 2 γ) 20 δ) 5

7. Ο Κώστας είχε 93 γραμματόσημα. Έδωσε απ' αυτά 15 στην αδερφή του. Πόσα γραμματόσημα του έμειναν;

- α) 78 β) 88 γ) 72 δ) κανένα απ' αυτά

8. Πως θα γράφεις τον αριθμό που έχει 4 δεκάδες και 12 μονάδες ;

- α) 412 β) 10 γ) 42 δ) 52

9. Πόσες δεκάδες υπάρχουν στο 60;

- α) 6 β) 10 γ) 16 δ) 60

10. Ποιός είναι ο πιο μεγάλος αριθμός που μπορούμε να γράψουμε με τα ψηφία 1,3,2;

- α) 213 β) 231 γ) 132 δ) 321

11. Μιά κότα γέννησε το καλοκαίρι 68 αυγά και το χειμώνα γέννησε 20 αυγά λιγότερα. Πόσα αυγά γέννησε η κότα το χειμώνα ;

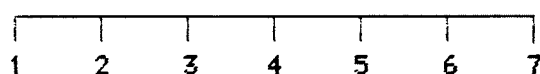
- α) 40 β) 48 γ) 60 δ) 88

12. Πόσες οχτάδες έχει το 40 ;

- α) 5 β) 6 γ) 8 δ) 4

13. Ποιά πράξη δείχνει το σχήμα αυτό;

- α) $7 + 2 = 9$ β) $3 + 4 = 7$ γ) $7 - 1 = 6$ δ) $7 - 2 = 5$



14. Ο Μιχάλης μοίρασε 77 καραμέλες σε 7 φίλους του. Πόσες καραμέλες πήρε ο καθένας.

- α) 10 β) 7 γ) 11 δ) 9

15. Συμπληρώστε την παρακάτω ισότητα.

$$(56 : 7) + (24 : 3) = ;$$

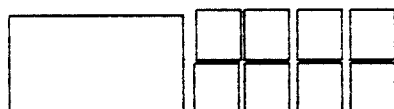
- α) 15 β) 8 γ) 16 δ) 14

16. Ήταν τρεις άνθρωποι πριν από τον Γιώργο στην ουρά. Τι θέση είχε ο Γιώργος;

- α) πρώτος β) τρίτος γ) τέταρτος δ) δεύτερος

17. Κόψαμε αυτό το ορθογώνιο. Τα κομμάτια του είναι

- α) κύκλοι β) ορθογώνια γ) τετράγωνα



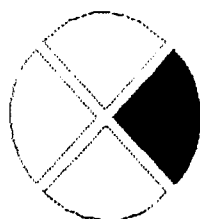
18. Ο Νίκος πήρε το ένα από τα τέσσερα ίσα μέρη. Ο Νίκος πήρε το

α) $1/2$

β) $1/4$

γ) $2/4$

δ) $1/3$



19. Το ένα γραμματόσημο έχει 7 δραχμές. Πόσο έχουν τα 9 γραμματόσημα ;

α) 63

β) 49

γ) 56

δ) 81

20. Πως θα γράψεις $20 + 100 + 6$ σαν ένα τριψήφιο αριθμό ;

α) 216

β) 621

γ) 126

δ) 261

APPENDIX 23:

The AL Math Test 2 (Grade IV)

1. Συμπληρώστε τον αριθμό που λείπει από την παρακάτω ισότητα :

$$(3 \times 10) + ; = 34$$

- α) 30 β) 5 γ) 3 δ) 4

2. Ποιός αριθμός έρχεται μετά; 55, 51, 47, ;

- α) 37 β) 43 γ) 21 δ) 42

3. Η Ελένη έχει 1961 δραχμές. Πόσες δραχμές θα της μείνουν αν αγοράσει ένα φόρεμα που κοστίζει 1084 δραχμές;

- α) 977 β) 77 γ) 877 δ) 900

4. Η μαμά αγόρασε μήλα 2 κιλά και 500 γραμμάρια και πορτοκάλια 200 γραμμάρια λιγότερα από τα μήλα. Τι βάρος έχουν τα πορτοκάλια;

- α) 2 κιλά β) 2 κ. 300 γρ. γ) 2 κ. 200 γρ. δ) 1κ. 300 γρ.

5. 7 μέτρα και 6 εκατοστόμετρα, πόσα εκατοστόμετρα είναι;

- α) 706 εκ. β) 760 εκ. γ) 76 εκ. δ) 12 εκ.

6. Ποιός αριθμός λείπει από την παρακάτω ισότητα ; $90 - 40 = 40 + ;$

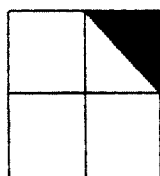
- α) 50 β) 10 γ) 40 δ) 80

7. Το μηδέν (0) στον αριθμό 703 φανερώνει :

- α) 10 δεκάδες β) 0 εκατοντάδες γ) 0 μονάδες δ) 0 δεκάδες

8. Ποιό κλάσμα δείχνει το χρωματισμένο μέρος τού σχήματος ;

a) $\frac{1}{2}$



c) $\frac{1}{8}$

b) $\frac{1}{4}$

d) $\frac{1}{16}$

9. Πόσες δραχμές είναι δύο κατοστάρικα, ένα πενητάρικο, ένα εικοσάρικο, δύο δεκάρικα και ένα τάληρο ;

- α) 300 β) 280 γ) 275 δ) 295

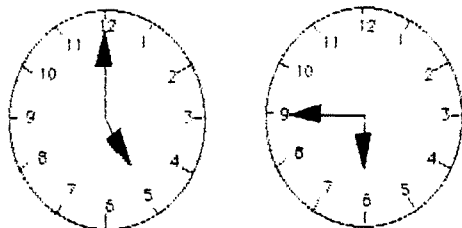
10. Τα δύο ρολόγια δείχνουν την ώρα που ο Τάσος άρχισε και τελείωσε το διάβασμά του. Πόσα λεπτά του χρειάστηκαν για να τελειώσει;

α) 9

β) 45

γ) 15

δ) 75



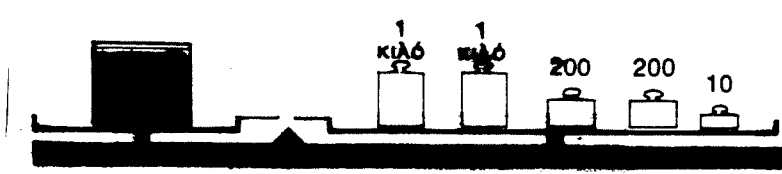
11. Πόσο βάρος έχει το δοχείο με το ράδι ;

α) 2 κ. 410 γρ.

β) 410 κ.

γ) 2 κ. 210 γρ.

δ) 2 κ. 400 γρ.



12. Τα παιδιά του σχολείου παρατάχθηκαν σε 65 τετράδες και 78 τριάδες. Πόσα είναι συνολικά τα παιδιά του σχολείου;

α) 494

β) 143

γ) 260

δ) 234

13. Τι μέρος του 80 είναι το 10;

α) $1/10$

β) $1/2$

γ) $1/8$

14. Ο δρόμος από το σπίτι στο σχολείο έχει μήκος 150 μέτρα και από το σχολείο στο γήπεδο 530 μέτρα και 50 εκατ. Πόση είναι η απόσταση από το σπίτι στο γήπεδο;

α) 680 μ

β) 730 μ.

γ) 680μ. 50 εκατ.

15. Έδωσα 55 δραχμές για να αγοράσω 3 μολύβια. Ο βιβλιοπώλης μου έδωσε 1 δραχμή ρέστα. Πόσο κάνει κάθε μολύβι;

α) 10 δρχ.

β) 18 δρχ.

γ) 15 δρχ.

δ) 20 δρχ.

16. Έχεις 72 τριαντάφυλλα να τα μοιράσεις εξ ίσου σε 9 αβαντοχέρια. Πόσα τριαντάφυλλα θα βάλεις σε κάθε αβαντοχέρι;

α) 9

β) 8

γ) 7

δ) 10

17. Ποιός αριθμός ρείνει ; $488 : 4 =$;

- α) 122 β) 222 γ) 120 δ) 12

18. Ποιός από τους παρακάτω αριθμούς είναι **μονός**;

- α) 610 β) 912 γ) 458 δ) 879

19. Ποιό είναι το επόμενο πολλαπλάσιο του 3 μετά το 12 ;

- α) 13 β) 15 γ) 21 δ) 30

20. Βρες του αριθμό που έχει 4 δεκάδες λιγότερες από το 91.

- α) 83 β) 40 γ) 51 δ) 50

21. Ποιά είναι η περίμετρος του τετραγώνου ;

- α) 32 γ) 24 εκ. γ) 64 εκ. δ) κανένα από τα παραπάνω



8 εκ.

22. Ποιός αριθμός έχει 6Ε 13Δ και 4Μ ;

- α) 6134 β) 634 γ) 613 δ) 734

23. Ποιός αριθμός ρείνει από την ισότητα; $256 : ; = 64$

- α) 4 β) 2 γ) 6 δ) 128

24. Ο Νίκος πλήρωσε για μία σοκολάτα 50 δρχ. Ο Βασίλης πλήρωσε για μία άμμη 5 δεκάρικα. Ποιός πλήρωσε περισσότερα χρήματα;

- α) ο Βασίλης β) ο Νίκος γ) Πλήρωσαν και οι δύο το ίδιο.

25. Ένας επιβάτης δεν πρόλαβε το λεωφορείο των 7.15. Το επόμενο λεωφορείο περνά στις 9.30. Πόσο χρόνο πρέπει να περιμένει ο επιβάτης;

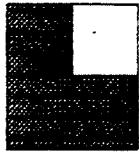
- α) 2 ώρες β) 2 ώρες και 15 λεπτά γ) 2 ώρες και 30 λεπτά δ) 1 ώρα και 30 λεπτά

APPENDIX 24

The AL Math Test 3 (Grade U)

1. Ποιός αριθμός λείπει από την ισότητα; $349 + \text{ ; } = 412$
α) 137 β) 63 γ) 761 δ) 100
2. Βρές τον αριθμό που είναι κατά δύο μικρότερος από το 1901.
α) 1999 β) 1899 γ) 1900 δ) 1903
3. Ποιό ψηφίο λείπει ; $17 \text{ ; } \times 5 = 890$
α) 0 β) 6 γ) 1 δ) 8
4. Ποιός αριθμός λείπει; $7620 : \text{ ; } = 762$
α) 76 β) 100 γ) 10 δ) 20
5. Ένα δοχείο χωρά 175 κιλά νερό. Ένα άλλο χωρά 67,200 κιλά λιγότερο. Πόσα κιλά χωρούν και τα δύο μαζί;
α) 107,800 κ. β) 242,200 κ. γ) 282,800 δ) 847 κ.
6. Ποιός από τους παρακάτω αριθμούς είναι κατά 100 μεγαλύτερος από το 2346;
α) 2446 β) 3346 γ) 2347 δ) 2356
7. Ποιός από τους παρακάτω αριθμούς **δεν διαιρείται** ακριβώς με το 3 και το 9;
α) 18 β) 63 γ) 24 δ) 171
8. Ο Ηλίας και η Μαρία φύτεψαν 60 λουλούδια. Πόσες δωδεκάδες φύτεψαν;
α) 4 β) 5 γ) 8 δ) 12
9. Τα μαθήματα στο σχολείο αρχίζουν στις 8.30 π.μ και τελειώνουν στις 1 μ.μ. Τα διαλείμματα διαρκούν 45 λεπτά. Πόσο κρατά η εργασία στην αίθουσα;
α) 3 ώρ. 35 λ. β) 4 ώρ. 30 λ. γ) 3 ώρ. 45λ. δ) 4 ώρ.
10. Πόσες δραχμές είναι 5 κατοστάρικά, 19 δεκάρικά και 15 δραχμές;
α) 534 δρχ. β) 705 δρχ. γ)) 350 δρχ. δ) 519 δρχ

11. Ποιά πρόσθεση από τις παρακάτω εξηγείται με την εικόνα ;



a) $\frac{1}{4} + \frac{2}{3} = \frac{11}{12}$

c) $\frac{3}{4} + \frac{1}{2} = \frac{5}{4}$

b) $\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$

d) $\frac{2}{3} + \frac{1}{2} = \frac{7}{6}$

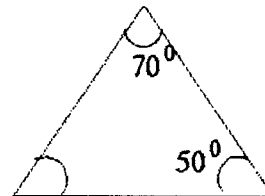
12. Πόσων μοιρών είναι η τρίτη γωνία;

a) 50°

β) 70°

γ) 40°

δ) 60°



13. Πώς θα γράφεις με δεκαδικό αριθμό το 4 ακέραιος και 2 χιλιοστά;

a) 4,2

β) 4,02

γ) 4,002

δ) 4,200

14. 196 παιδιά παρατάχθηκαν σε τετράδες. Πόσες τετράδες σχημάτισαν;

a) 40

β) 49

γ) 36

δ) 50

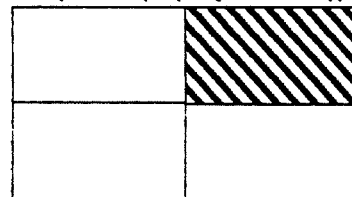
15. Βρες τον αριθμό που δείχνει το χρωματισμένο μέρος του σχήματος.

a) 0,25

β) 0,33

γ) 0,4

δ) 0,75



16. Ο Γιάννης πήρε το $\frac{1}{4}$ των βόλων, η Ειρήνη τα $\frac{3}{6}$ και η Άννα τα $\frac{2}{8}$. Ποιά παιδιά πήραν από ίσο μέρος βόλων;

a) Ο Γιάννης και η Ειρήνη β) Η Άννα και η Ειρήνη γ) Ο Γιάννης και η Άννα.

17. Βρες τον αριθμό που λείπει από την παρακάτω ισότητα.

$$40 : 4 = ; - 35$$

a) 10

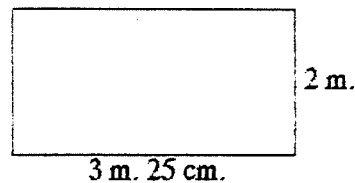
β) 35

γ) 45

δ) 8

18. Ένας κήπος σχήματος ορθογωνίου έχει μήκος 3 μ. και 25 εκ. και πλάτος 2 μ. Πόση είναι η περίμετρος του ;

- α) 10 μ. β) 10 μ. 50 εκ. γ) 5 μ. 50 εκατ. δ) 10μ. 25 εκ.



19. Ποιό από τα παρακάτω κλάσματα είναι μεγαλύτερο από την ακέραιη μονάδα;

a) $\frac{7}{7}$

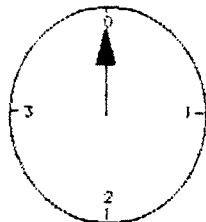
c) $\frac{3}{4}$

b) $\frac{15}{8}$

d) $\frac{9}{10}$

20. Αυτή είναι η εικόνα ενός ρολογιού με ένα δείκτη. Ο δείκτης χρειάζεται 4 λεπτά για να κάνει το γύρω του ρολογιού μία φορά. Αν ξεκινήσει από το μηδεν που θα είναι μετά από 11 λεπτά;

- α) 0 β) 1 γ) 2 δ) 3



21. Ποιός είναι ο αριθμός που έχει 1 χιλιάδα, 2 εκατοντάδες, 4 δεκάδες και 13 μονάδες;

- α) 12413 β) 1241 γ) 2413 δ) 1253

22. Τα παιδιά έφαγαν στην αρχή τα $\frac{4}{8}$ της τούρτας και ύστερα άλλα $\frac{3}{8}$. Τι μέρος της τούρτας έμεινε;

a) $\frac{7}{8}$

c) $\frac{2}{8}$

b) $\frac{8}{8}$

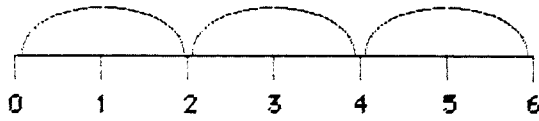
d) $\frac{1}{8}$

23. Ο Γιάννης παίρνει κάθε μέρα για τα ατομικά του έξοδα 35 δρχ. και ξοδεύει τις 28 δρχ. Πόσες δρχ. θα του μείνουν σε ένα μήνα;

- α) 1050 δρχ. β) 210 δρχ. γ) 280 δρχ. δ) 840 δρχ.

24. Ποιά από τις παρακάτω πράξεις **δεν φαίνεται** στην εικόνα;

- α) $6 - 3 = 3$ β) $2 + 2 + 2 = 6$ γ) $3 \times 2 = 6$ δ) $6 : 3 = 2$



25. Ένας εργάτης δούλεψε 25 μέρες και πήρε 42.500 δραχ. Πόσο ήταν το ημερομίσθιό του;

- α) 2125 δραχ. β) 1000 δραχ. γ) 1700 δραχ. δ) 1900 δραχ.

APPENDIX 25:

The AL Math Test 4 (Grade VI)

1. Αν $820 - x = 542$, ποιος αριθμός μπορεί να μπει στη θέση του x ;

- α) 280 β) 1362 γ) 400 δ) 278

2. Ποιά ζευγάρια αριθμών μπορεί να χρησιμοποιηθεί στην παρακάτω αριθμητική παράσταση;

$$64 = (; \times 3) + ;$$

- α) 15 και 4 β) 2 και 2 γ) 20 και 1 δ) 21 και 1

3. Ποιος αριθμός λέει ; $120 \times ; = 600$

- α) 5 β) 4 γ) 100 δ) κανένα από αυτά

4. Πόσα λεπτά είναι τα $\frac{3}{10}$ της ώρας;

- α) 30 β) 60 γ) 10 δ) 18

5. Το βάρος του Παύλου είναι 10 κιλά περισσότερο από το βάρος του Κώστα. Αν το βάρος του Κώστα είναι 50 κιλά, ποιά αριθμητική παράσταση μπορείς να χρησιμοποιήσεις για να βρεις το βάρος του Παύλου;

α) $x - 10 = 50$

β) $10 \times x = 50$

γ) $x + 10 = 50$

δ) $x/10 = 50$

6. Ποιά από τις παρακάτω συγκρίσεις είναι λάθος;

α) $\frac{3}{4} > \frac{2}{4}$

γ) $\frac{7}{12} < \frac{8}{12}$

β) $\frac{5}{8} = \frac{8}{5}$

δ) $\frac{5}{7} < \frac{5}{8}$

7. Μπροστά στο σχολείο υπάρχει μία τριγωνική πινακίδα της τροχαίας. Η βάση της είναι 50 εκ. και το ύψος της 60 εκ. Πόση είναι η επιφάνεια της;

- α) 3000 τετ. εκ. β) 1500 τετ. εκ. γ) 300 τετ. εκ. δ) κανένα από τα παραπάνω

8. Με ποιόν από τους παρακάτω κλασματικούς αριθμούς είναι ίσο το 3,25;

a) $3\frac{25}{10}$ c) $\frac{325}{1000}$

b) $3\frac{1}{4}$ d) $3\frac{1}{2}$

9. Ο Πάνος έβαζε στον κουμπαρά του 25 δρχ. κάθε εβδομάδα για 9 εβδομάδες. Με τα λεφτά που μαζεύτηκαν αγόρασε ένα φακό και του περίσεψαν και 30 δρχ. Ποιά από τις παρακάτω ισότητες δείχνει πόσο κόστισε ο φακός;

a) $(9 \times 25) + 30 = x$

β) $(9 \times 30) - 25 = x$

γ) $(9 \times 25) - 30 = x$

δ) $30 - 25 = x$

10. Ποιός αριθμός λείπει; $19 + (33 \times x \setminus 33) = 21$

a) 0

β) 1

γ) 2

δ) 21

11. Ο Κώστας είναι 10 ετών και 2 μηνών και ο Γιάννης είναι $11\frac{1}{2}$ ετών. Ποιά είναι η διαφορά της ηλικίας τους;

a) 8 μήνες

β) 1 χρόνος ακριβώς

γ) 1 χρόνος και 2

μήνες

δ) 1 χρόνος και 4 μήνες

12. 3 κιλά και 400 γραμμάρια ράδι είναι μοιρασμένο σε 4 δοχεία. Πόσο ράδι έχει κάθε δοχείο;

a) 1100 γραμ.
850 γραμ.

β) 1 κιλό και 200 γραμ.

γ) 350 γραμ.

δ)

13. Ποιός αριθμός μπορεί να μπει στη θέση του x;

$(6 \times x) - 50 = 100$

a) 25

β) 50

γ) 150

14. Ποιά από τις παρακάτω ισότητες δεν φαίνεται στο σχήμα;

1			
$\frac{1}{2}$		$\frac{1}{2}$	
$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$

a) $1 = \frac{2}{2}$

c) $\frac{1}{2} = \frac{2}{4}$

b) $1 = \frac{4}{4}$

d) $\frac{2}{4} = \frac{4}{8}$

15. Ποιός αριθμός διέπει; $480 : ; = 4,8$

α) 10

β) 48

γ) 1000

δ) 100

16. Ποιός από τους παρακάτω αριθμούς είναι μεγαλύτερος από το 0,761;

α) 0,8

β) 0,699

γ) 0,7603

δ) 0,716

17. Ο Πέτρος έχει ύψος 1,9 μέτρα και ο Γιάννης 1,82 μέτρα. Πόσο ψηλότερος είναι ο Πέτρος ;

α) 8 εκατ.

β) 9 εκατ.

γ) 80 εκατ.

δ) 18 εκατ.

18. Το δεκαδικό κλάσμα $8/100$ μπορούμε να το γράψουμε

α) 0,8

β) 0,08

γ) 8,0

δ) 0,800

19. Η Μαρία είναι πιο κοντή από το Νίκο κατά 32 εκατ. Ο Νίκος είναι πιο ψηλός από τον Πέτρο κατά 21 εκατ. Ποιά από τις παρακάτω προτάσεις είναι σωστή;

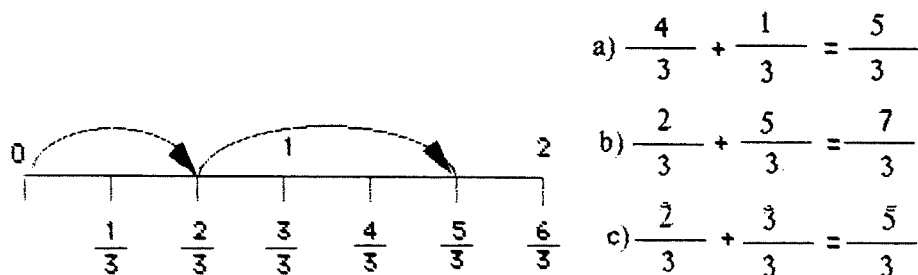
α) Η Μαρία είναι πιο ψηλή από τον Πέτρο κατά 11 εκατ.

β) Η Μαρία είναι πιο κοντή από τον Πέτρο κατά 11 εκατ.

γ) Η Μαρία είναι πιο κοντή από τον Πέτρο κατά 53 εκατ.

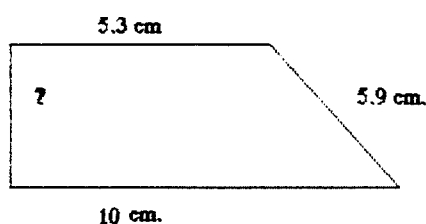
δ) Η Μαρία είναι πιο ψηλή από τον Πέτρο κατά 9 εκατ.

20. Ποιά πρόσθεση δείχνει το παρακάτω σχήμα;



21. Το τραπέζιο έχει περίμετρο 25,7 εκατ. Πόσα εκατοστόμετρα είναι η τέταρτη πλευρά του;

- α) 13,6 εκατ. β) 5,9 εκατ. γ) 4,5 εκατ. δ) κανένα απ' αυτά

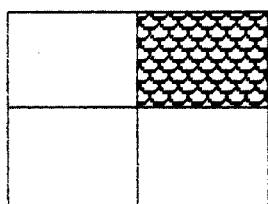


22. Ο Κώστας αγόρασε 3 κιλά πορτοκάλια. Αγόρασε και λεμόνια που έκαναν 36 δρχ. Όλα τα χρήματα που πλήρωσε ήταν 222 δρχ. Πόσο αγόρασε το 1 κιλό τα πορτοκάλια ;

- α) 74 δρχ. β) 62 δρχ. γ) 186 δρχ.

23. Ποιός αριθμός δείχνει το χρωματισμένο μέρος του σχήματος;

- α) 0,25 β) 0,33 γ) 0,4 δ) 0,75



24. Ποιός κλασματικός αριθμός λείπει; ; $+ 7/12 = 1$

- α) 7/12 β) 5/12 γ) 12/12

25. Η Μαρία έτρεξε με το ποδήλατο της 2,75 χμ και 750 μέτρα. Ο Δημήτρης έτρεξε 2000 μέτρα και 1.2 χλμ. Ποιός έτρεξε περισσότερο;

- α) Η Μαρία β) Ο Δημήτρης γ) έτρεξαν και οι δύο το ίδιο.

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List of Abbreviations.

LD: Learning Disabled

SC: Special

RC: Regular

NA: Normal

LA: Low Achievement

PCS: Perceived Competence Scale

PCE: Perceived Competence Evaluation

PCA: Perceived Competence Affect

PCG: Global Self-Esteem

SDQ: Self Description Questionnaire

SDQR: Verbal (Reading) Self-Concept

SDQM: Maths Self-Concept

IAR: Intellectual Achievement Responsibility Questionnaire

I+: Responsibility for Success

I-: Responsibility for Failure

I+A: Success Ability

I-A: Failure Ability

I+E: Success Effort

I-E: Failure Effort

ACV: Verbal Achievement

ACM: Maths Achievement



Column Number	Variable
1 - 3	Identification number
4 - 6	Age
7	Group (Special = 1, Regular = 2)
8	Sex (Male = 1, female = 2)
9	Grade Level
10	School (A = 1, B = 2, C = 3, D = 4, E = 5, F = 6)
11	Father's Occupation
12	Verbal Achievement (ACV)
13	Maths Achievement (ACM)
14 - 15	Maths Test
16 - 17	IARtotal
18 - 19	I+
20 - 21	I-
22	I+A
23	I-A
24	I+E
25	I-E
26 - 30	PCE
31 - 34	PCA
35 - 38	PCG
39 - 43	SDQM
44 - 48	SDQR

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